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ON  
THE DIFFICULTIES AND FALLACIES ATTENDING  
PHYSICAL DIAGNOSIS  
IN  
DISEASES OF THE CHEST.

READ BEFORE THE PHYSICAL SOCIETY, FEB. 28, 1846.

BY THOMAS ADDISON, M.D.

---

WERE I to affirm, that Laennec contributed more towards the advancement of the medical art, than any other single individual, either of ancient or of modern times; I should probably be advancing a proposition, which, in the estimation of many, is neither extravagant nor unjust. His work, *De l'Auscultation médiate*, will ever remain a monument of genius, industry, modesty, and truth. It is a work, in perusing which, every succeeding page only tends to increase our admiration of the man, to captivate our attention, and to command our confidence. We are never permitted for a moment to imagine that we are reviewing, for the first time, the mere professions of an ingenious speculator or plausible theorist: we are led insensibly to the bedside of his patients; we are startled by the originality of his system; we can hardly persuade ourselves that any means so simple can accomplish so much; can overcome and reduce to order the chaotic confusion of thoracic pathology; and hesitate not, in the end, to acknowledge our unqualified wonder at the triumphant confirmation of all he professed to accomplish. If to any one this should appear the language, rather of exaggeration and enthusiasm, than of sober judgment; let him, as a matter of justice to Laennec, endeavour to ascertain the actual state of our knowledge on the subject, previous to the time of that distinguished man; let him consult the work of Cullen, the standard work of that day; let him divest himself for the moment, if he can, of all that he has learned directly or indirectly from the labours of Laennec;

let him lay aside what he may now regard as the mere alphabet of thoracic disease;—I say, let him do this, and he will, I doubt not, be amazed to find, that of this very alphabet Laennec was the original and undisputed author.

Great though his merits, incalculable his services to the profession, and indisputable the efficiency of his system of diagnosis; Laennec furnishes no exception to the common lot of all original discoverers: for he, like the rest, had to encounter his full share of doubt and denial, of misrepresentation and ridicule. It cannot, however, be otherwise than gratifying to his admirers and to all lovers of justice to know, that he survived his labours, and his publication, sufficiently long, to reap an honourable reward in the respect, the acknowledgments, and cordial congratulations, of the most eminent in his profession; and indeed of all, who, having had the industry and perseverance fairly to test his merits, possessed a heart capable of rendering honour where honour was due. It is nevertheless scarcely to be doubted, and very much to be lamented; that the cause of Laennec has sustained more real and serious injury from indiscreet and indiscriminate advocacy; than from the most determined and open hostility. Credulity may be less unamiable than scepticism: we may be disposed to regard the former as an infirmity untainted by selfishness; whilst we look upon the latter as too often blended with envy, hatred, or malice: still are they alike opposed to the advancement of truth. In the present instance, indeed, the man of science may be permitted to dissent from the moralist; since scepticism, whatever shape it may assume, or from whatever motives it may proceed, serves but to provoke discussion, to encourage inquiry, and to subject all novel pretensions to the searching test of repeated and careful experiment: whereas, the tendency of an easy belief is just as certainly to create and strengthen prejudice, to engender misguided enthusiasm, and to pervert or suspend the exercise of that calmer judgment, so essential to the honest and impartial investigation of facts.

Books and essays without number, and of great value, have been written for the purpose of adding favourable testimony to the merits of the stethoscope; to increase its utility, and



extend its application; whereas, so far as I know, not a single individual has deemed it right, or desirable, to pursue the opposite course, of expressly publishing to the world, the manifold difficulties and fallacies attending its use. The publications alluded to, by the semblance of a too exclusive advocacy, have, according to my humble belief, placed the stethoscope and its pretensions in a false position; they have awakened in the minds of many a vague notion of infallibility; they have led the profession and the public to expect too much; and, by suppressing or concealing the real imperfections of a favourite expedient, have put it in the power of hostile parties to inculcate the stethoscope for the errors of the stethoscopist. But if the works of even able and experienced writers have thus done injury to the cause of physical diagnosis, and have furnished weapons of attack to its opponents; what shall we say of that very numerous class of persons, who, with the most slender experience, mistake zeal for proficiency, and are perpetually falling into grievous and palpable error? The enthusiasm, the rashness, the bigotry and conceit of the too exclusive stethoscopist have indeed most seriously retarded the adoption, and vitiated the claims of physical diagnosis; and have done more to discourage the student, to shake the confidence of the profession, and to throw ridicule upon the stethoscope itself, than the most inveterate hostility could ever have accomplished. They seem to look upon the instrument as all-sufficient; they rush at once to auscultation and percussion; they neglect or disdain to make those careful and minute inquiries, which no sound and sensible physician ever fails to do; and thereby convert an invaluable auxiliary, into what, in their hands at least, proves but an imperfect and treacherous substitute. Unfortunately, in the medical profession, all truly valuable and practical knowledge, is only to be attained by a proportionate sacrifice of time and labour; and, as a general rule, the one may very fairly be measured by the other. Physical diagnosis is signally obedient to this law; a perfect mastery over it would indeed be an inestimable acquisition; but its accomplishment can scarcely be numbered with the possible. The truth is, even moderate proficiency in the use of the stethoscope is much more rarely achieved, than many

are willing to admit; and I venture to affirm, that the student, who shall attempt to acquire such proficiency from a perusal of books, and by an attendance upon patients in the wards of even this large hospital, will, if he rely solely upon his own individual efforts, unaided by an experienced guide, most certainly and most miserably fail in his object. His attempts will prove but a profitless expenditure of valuable time; he will only be storing his mind with false knowledge; and, in the end, will assuredly reap for his reward disappointment, mortification, and loss of professional fame. The very language of physical diagnosis must prove, in a great measure, unintelligible to him; and it would be almost as unreasonable to expect, that a man born blind, should, on receiving his sight, be able at once to recognise, and accurately distinguish the ever-varying tints of a landscape; as to suppose that a novice in the art of physical diagnosis, could, without the aid of an interpreter, uniformly attach a correct idea to every term employed to express the ever-varying phenomena elicited by auscultation and percussion. It may indeed be alledged, that the example of Laennec himself presents us with unquestionable proof how much may be accomplished by the unaided exertions of an individual. This is undoubtedly true; but the fine genius, the indefatigable industry, and vast opportunities of Laennec do not fall to the lot of many; and his case can only be regarded as a very rare exception to a very general rule. Laennec not only gave existence, but a language to the art. Scarcely more hopeful is the case of the practitioner who, having unfortunately neglected the cultivation of physical diagnosis during his pupilage, has already entered upon the duties of his profession. Driven by necessity or pride, to rely upon his own resources; he will, even with all the advantages of a large hospital, seldom be successful; and if without the benefit of such opportunities as a large hospital affords, he would probably be exercising a sound discretion, were he to repudiate the practice altogether; or, at most, make it entirely subservient to other means of diagnosis.

Such sentiments, proceeding from a hospital physician, may by some be pronounced to be vain and presumptuous. Nevertheless, my conscience tells me, that in the present

instance, plain speaking, if not the most prudent, is certainly the most honest policy. To strip the stethoscope of the extravagant and meretricious pretensions thrust upon it by injudicious friends; to make a candid acknowledgement of the manifold difficulties and fallacies to be encountered in its employment; to state fairly what it will not, as well as what it will do, is surely calculated to render it some service: for by so doing, we disarm hostility, and establish on a solid foundation its legitimate claims to the respect and confidence of the profession. If, notwithstanding this explanation, my sentiments shall be deemed an offence; it is to be hoped that the confessions, which are to follow, will go some way towards its excuse: neither will it be taxing generosity too much, to claim an acquittal from all empirical motives, if I venture to declare, what is well known to many members of the Society, that these confessions are made by one, who has zealously cultivated the practice of auscultation and percussion, at this large hospital, and elsewhere, for a quarter of a century.

Desirous on the present, as on all other occasions, of economizing the time of the Society, and promoting discussion; I have arranged my subject in the form of separate propositions, and have attached a number to each. By such an arrangement, any single proposition can readily be singled out, and commented upon by those gentlemen, whose intention it is to favour us by joining in the discussion.

*PROP. 1.—It is well known, that many persons, whilst under examination, entirely fail to perform the respiratory act efficiently; either from mere nervousness, or from a mistake in regard to the mode of accomplishing it: they merely heave the chest up and down, instead of freely and forcibly inhaling and expelling the air. This may lead to an erroneous belief, that the respiratory murmur is deficient, or even absent, whilst the lungs are perfectly healthy.*

This source of fallacy is best corrected, by desiring the patient to cough, and instantly afterwards to inspire forcibly, in order to cough a second time. When to this expedient is added a comparison of the two sides of the chest, the actual condition of either lung, may, in general, be determined with considerable precision.



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2. *Whatever lessens the freedom, mobility, or elasticity of the ribs, renders the sound, on percussion, more dull. Hence it is, that in rickety persons, where deformity of the chest has taken place subsequent to birth, the signs furnished by percussion are often extremely unsatisfactory ; and indeed, under such circumstances, neither percussion, nor, in many instances, auscultation, can be much relied upon.*

3. *Some persons, without actual deformity, have naturally such fixedness of the ribs ; that they at all times manifest very imperfect resonance, as well as considerable feebleness of the respiratory murmur.*

4. *The rigidity of the cartilages of the ribs in advanced life, has a similar effect ; and, moreover, often tends to throw obscurity over hypertrophy of the heart, by preventing the usual heaving of the ribs at each systole of the hypotrophied organ.*

“The dulness of the sound elicited by percussing the chests of aged and deformed persons arises probably from the fixity of the ribs at their extremities. In aged persons this arises from ossification of the cartilages and rigidity of the tissues ; and, in deformity, from a permanently unnatural elevation or depression of the ribs. In such conditions the force of a sudden blow upon a rib is transmitted to the parts at its extremity, and this occurs the more readily from the convexity of the parietes. Whereas, in the condition of health, such a force applied to a rib would be in a great measure limited to it, the yielding attachments of either end allowing of its vibrating. Looseness of connection, or fixation of the extremities will produce much greater difference in the cone of a curved rod, the force being applied to the convexity, than when the rod is straight. In the former, the force coming upon the key-stone of the arch is transmitted on either side to the extremities of the curve ; whereas, in a straight rod, the force applied curves it from the force, and tends to loosen the connection at the extremities ; its own elasticity causing it to return to its previous condition, and so to vibrate although the ends be fixed.” \*

\* Dr. Gull.

5. *When exploring the chest in a case of recent disease, we may be misled by the permanent effect of an ancient pleurisy.*

Such a sequel to pleurisy may, though rarely, involve both sides of the chest; and may be so considerable, as to resemble externally the deformity which usually results from rickets. More commonly, we find the deformity of old pleuritic contraction at the inferior part of the chest only, either anteriorly, or posteriorly, or both.

This deformity from pleuritic contraction is sometimes obvious to the sight; but even when not so apparent, the difference of the two sides, when one only is affected, may in general be recognised by simply grasping from before to behind the ribs of one side with the right, and the ribs of the other with the left hand; and comparing the respective roundness or flattening of the two. The physical signs, also, of ancient pleuritic contraction, although often obscured by the more recent disease, are in general pretty decisive: these are dullness of sound on percussion, feebleness or absence of respiratory murmur, constrained movement of the ribs, the dry crepitations or cracklings, especially during inspiration, the harsh dry croaking sound or *râle sonore* during inspiration; to which may be added, the incompatibility of a few, or of many of these with the recent history of the case, and with other physical signs present. In such a case, I consider the employment of the naked ear much superior to that of the stethoscope. When ancient pleuritic mischief exists at the upper part of the chest, and especially in front, it occasionally proves a source of very serious mistakes, to be noticed hereafter.

6. *When, as usually happens, rickety deformity consists in lateral flattening of the ribs, with projection of the sternum, the action of the heart is liable from slight causes to beat with such violence, and to have its sound and impulse so extensively diffused, as not unfrequently to have led to an unfounded apprehension of serious organic disease of that organ.*

I had an opportunity of witnessing a good illustration of this some time ago, with my friend Dr. Ridge. The ready disturbance of the heart's action, and the great extent of its

sound and impulse had led to a belief that it was organically diseased; yet inspection after death displayed a healthy organ.

7. *When acute disease of the lungs occurs in persons with rickety deformity, the violence of the symptoms is often quite disproportionate to the extent and severity of the pulmonary disease; and may thereby, suggest unnecessarily active treatment.*

8. *When the abdomen is greatly distended with fluid, the encroachment of the diaphragm upon the chest and its imperfect descent during inspiration, often give rise to such dulness on percussion, and feebleness of respiratory murmur at the inferior part of the chest, as may be mistaken for effusion into the latter cavity. On the right side enlargement of the liver, and on the left enlargement of the spleen, may, to a certain extent, have a corresponding effect.*

9. *Of all the sources of fallacy to be encountered in the physical diagnosis of diseases of the lungs, bronchitis is by far the most prolific of mistakes and oversights. It may greatly obscure phthisis, pneumonia, and pleurisy; as well as divers forms of chronic disease of the organs.*

10. *When the bronchitic complication in phthisis is considerable, we often fail to detect some, or all, of the ordinary physical signs of the latter — dulness on percussion, tubular respiration, and even bronchophony or pectoriloquy. This is more especially the case, however, in the earlier stages of phthisis; the difficulty being then increased by the absence of any flattening, or even immobility, of the ribs of the side affected.*

It is under such circumstances, that the too exclusive stethoscopist is liable to be beaten in diagnosis by those who reject physical examination altogether; for, the latter inquires carefully into the history of the patient and of his family, he observes attentively the patient's general aspect, and the character and order of the general symptoms; all of which are wont to be too much disregarded by the stethoscopist. Nevertheless, if the stethoscopist do his duty, he has greatly the advantage: he will institute an equally careful inquiry; added to which, he will observe whether the



bronchial obstruction is limited to the apex of the lung; he will repeatedly, and for some minutes at a time, apply the stethoscope, or, what I prefer, the naked ear, to the upper part of the chest; he will desire the patient to breathe freely, to cough, and, if possible, to expectorate. He will, by so doing, often succeed in removing the obstructing mucus, and thereby develope, however slightly, some degree of bronchial respiration, or bronchophony, or both;—signs strongly confirmatory of phthisical disease in doubtful cases. According to my own experience the individual symptom, which, without being decisive, above all others increases the apprehension of phthisical disease, is occasional slight hæmoptysis just sufficient to tinge or streak the sputa. Little reliance can, I fear, be placed upon any other appearances of the sputa, as distinctive of the two diseases. The more limited the bronchitis, especially if situated at the apex, the greater the probability of its being associated with phthisis: the more general the bronchitis, especially if it affect both lungs, the greater the hope of an exemption from phthisis. The more abrupt the transition from bronchial obstruction to natural or puerile respiratory murmur in the affected part of a lung, the greater the likelihood of phthisis.

Moreover, when there are no indications of bronchitis of the small tubes, and its almost constant associate, vesicular emphysema; constituting a very common form of what is vulgarly called asthma; a puerile or blowing murmur, wherever situated, ought at all times to create a suspicion of phthisical or other form of consolidation in the adjacent pulmonary tissue; although neither auscultation nor percussion may detect its presence at the time. On the other hand, in the form of bronchitis alluded to, such puerile or blowing murmurs are so very common; that, whenever the long, laboured, wheezing, expiratory murmur; or, paroxysmal character of the dyspnœa, indicates the former; we may at all times expect to find more or less of the latter.

The general tendency of bronchitis is to enlarge; that of phthisis to contract the chest.

11. *When with bronchitic rales the stethoscopist detects some dullness of sound on percussion, tubular respiration, bron-*

*chophony, pectoriloquy, and gurgling; it still is not conclusive evidence of phthisis; as the whole of these signs may result from the permanent changes produced by a former pleurisy; pleuropneumonia; or, whooping-cough; or even from a recent pleurisy or pneumonia; when these several conditions happen to be associated with considerable bronchitis.*

There is a case in Lazarus Ward, under the care of Dr. Barlow, somewhat illustrative of this proposition. We have the history of ancient pleurisy; there is universal dullness over the right side, with contraction of the ribs; vibration is not extinct; the patient expectorates puriform matter; and there are all the signs of excavation in the lung. The case is, in every respect, so strongly marked, that no one can doubt its original character; although before death, I hold it to be impossible to pronounce with certainty, the existence or absence of a cavity.

The case of Robert B——, aged 28, admitted into our Clinical Ward, resembled the above, in several particulars. He had been in the hospital four years before with the sequelæ of pleurisy;—general dullness over the whole of the right side of the chest; contraction of the ribs; heart drawn over to the right side; all the ordinary signs of an excavated lung; and copious puriform expectoration. When he reappeared in our Clinical Ward; with the exception of greater emaciation, his general condition and the state of the right chest were little altered.

Acute disease set up in the opposite lung, destroyed life; and dissection proved the correctness of the opinion that had been formed, as to the pleuritic origin of the disease in the right side. The remarkable displacement of the heart excited some surprise; nevertheless, I am disposed to conclude, from what I have seen in practice; that great contraction of the right chest after pleurisy almost as certainly draws the heart towards the same, as extensive effusion into the left chest forces it towards the opposite, side.

When the changes just described are more limited in extent; and more especially when they occur at the upper part or apex of the lung; a correct diagnosis becomes much more difficult. The compressed or condensed lung, the

dilated tubes, and copious bronchial secretion give rise to signs perfectly identical with those of disorganizing phthisis; and although the former may prove fatal, either by gradual emaciation and exhaustion, or by setting up actual ulceration in the pulmonary tissue; still our prognosis would be very different in the two cases—the one holding out a fair and reasonable hope of recovery; whilst the other would be regarded as nearly, or altogether hopeless.

The history and progress of the case, together with a careful consideration of the symptoms present and past, will afford us the best grounds on which to found our diagnosis.

12. *When, in phthisis, the larynx becomes so involved as to impede the entrance of air, and thereby give rise to a permanent rale sonore in that organ; the reverberation of the rale through the entire chest, at each inspiration, greatly obscures the stethoscopic signs, and often leads to a mistaken belief, that the obstruction and imperfect respiratory murmur are attributable to the lungs themselves; when the latter, though perhaps unhealthy, are in a condition totally different from that suspected.*

This source of fallacy is detected by applying the stethoscope to the larynx itself, and by exploring both sides of the chest; when it will be found that the *rale sonore* is audible everywhere.

13. *When, with partial obstruction in the larynx, there is complete loss of voice; the results of mere auscultation are often of very little avail in diagnosis.*

14. *When the bronchi opening into a phthisical cavity are temporarily obstructed by secretion, auscultation may fail to detect that cavity, especially if the patient breathe but moderately; and should the cavity be large and superficial, the fallacy may be rendered more complete by a certain degree of resonance being elicited by percussion.*

In every case of suspected phthisis, therefore, we ought to cause the patient to breathe and cough with some violence; and repeat the experiment from time to time, whilst the ear continues to be applied to the chest. I have known large cavities overlooked, from a neglect of these precautions: the



puerile respiration, which so often surrounds phthisical obstruction, tending not a little to promote the fallacy.

15. *A person may have a violent tearing cough, lasting for weeks or months, attended with slight mucous expectoration, occasionally even streaked with blood, and causing pain to be felt through the whole chest; as well as an appearance of general constitutional distress; whilst neither auscultation nor percussion can detect any morbid change within the chest.*

All this often results from a relaxed uvula, in either sex; or, if the patient be a female, it may depend upon hysterical irritation. More rarely I believe it to occur in connection with miliary tubercles, antecedent to phthisical disorganization.

16. *When any form of chronic induration of the pulmonary tissue exists, and especially if attended with dilated bronchial tubes, neither auscultation nor percussion enables us to distinguish such a condition of lung from phthisical disease. If bronchitis be present, and the induration be situated at the apex, the signs are perfectly identical with those of phthisical disorganization.*

Our diagnostic resources are to be found in the history and progress of the case, the absence of some of the more ordinary symptoms of phthisis, and some incongruity observable between the local signs and the general aspect and condition of the patient. Illustrations of this proposition are of repeated occurrence.

17. *Auscultation and percussion alone are insufficient to distinguish malignant disease, hydatids, or a tumor from more ordinary diseases of the chest.*

Nevertheless, by disclosing something unusual, or apparently incompatible with ordinary diseases of the chest, physical examination will often excite a suspicion, which,—by a careful consideration of the history and progress of the case, by the wooden dulness of sound on percussion, by the peculiar expectoration, by the effects of mechanical obstruction on the veins of the neck or external chest, or

even by exploration with a fine needle or trochar—may occasionally be converted into certainty.

A very remarkable fallacy of the opposite kind came recently under my own observation. A lady, whom I had attended professionally for several years, had occasion to travel whilst in a very delicate state of health. After much suffering from increasing illness, she at length, in returning, reached Paris; and there consulted one of the highest medical authorities. Finding extreme dulness in the upper part of the chest, and some resonance remaining below and behind; the signs and suffering were pronounced to arise from some solid growth. As I had examined the chest a short time before her departure; as I knew that she had diseased heart after rheumatism; and that a former attack of pleuro-pneumonia in all probability had left adhesions; I could not but conclude that fluid effusion was the cause of her distress. I discharged several pints.

18. *If acute pneumonia have already proceeded to complete hepatization when we first examine the patient, the physical signs are not unfrequently insufficient to distinguish the morbid change from phthisical disease, or from ancient pulmonic induration, with or without dilated bronchial tubes. This is more especially the case when acute pneumonia assails the apex of a lung, which is by no means very uncommon.*

I have, on several occasions, known hepatization of the apex from acute pneumonia, pronounced to be phthisis by stethoscopists: they have not sufficiently appreciated the difficulty; they have neglected to inquire carefully into the history and progress of the case; and have mistaken the pungent heat of skin of ordinary pneumonia, for that which occurs in phthisis; and which I believe, nevertheless, has often the same origin.

“MARY B——, aged 19, admitted, under Dr. Addison. She had always been delicate; and after the whooping-cough and measles, which she had had eight years before, had been subject to attacks of cough and cold, in which she had frequently expectorated blood.

“When admitted, she had a troublesome cough, with scanty sputa, slightly tinged with blood. There was dulness on percussion below the left clavicle, with tubular breathing and gurgling,

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the last extending down nearly to the margin of the ribs, where it became more dry and crepitating. Posteriorly there was dulness on the left side, extending from the apex nearly as low as the angle of the scapula; and tubular breathing and bronchophony to the same extent: slight tubular breathing and bronchophony at the right apex, with large crepitation.

“Under the impression that phthisis was present, she was ordered,

Empl. Canth. infra claviculas singulas applicetur.

Pil. Papav. c̄ Ipecac. bis die sumat.

Mist. Mucilag. ter die sumat.

Under this treatment the cough became worse; sputa more copious, fawn coloured, and uniform, except that it contained puriform streaks; the head painful; pulse 120, compressible; cheeks flushed; skin hot and pungent; while the signs afforded by auscultation and percussion continued unaltered. She was then bled twice to eight ounces; and calomel, antimony, and opium were administered. Her mouth was kept sore by the calomel for a few days, when it was discontinued, and nothing given but julep ammon. acet. Under these remedies, the dulness, tubular breathing, bronchophony, and gurgling at the left apex, gradually diminished, and at length entirely disappeared. The tubular breathing and bronchophony at the right apex persisted longer, and caused some alarm; but these also ceased: the expectoration became white and frothy, and then, with the cough, subsided.”

19. *When pneumonia occurs in its simplest form; that is, with little or no bronchial complication; there is sometimes no cough, and consequently no expectoration; the whole case so closely resembling common continued fever, that both the stethoscopist and the non-stethoscopist are apt to be thrown off their guard.*

In such a case the stethoscopist has greatly the advantage; for if he do his duty, he will pretty certainly detect the pneumonia by physical examination; whereas the non-stethoscopist is very likely to remain in ignorance of its existence to the serious detriment or destruction of the patient.

Although there are many exceptions; this, the simplest form of pneumonia, most frequently occurs in the aged and cachectic; and in such subjects I have met with a few cases in which even an ordinary physical examination of the chest,



might have failed to detect the disease. A case of the kind occurred some time since in Billet Ward; and to which, I remember having directed the attention of Dr. Gull. On desiring the patient to breathe, neither crepitation nor tubular respiration could be heard; but on urging him to inspire violently and to cough both signs became sufficiently developed, to declare the presence of the disorder. It would appear as if the muscular strength were so much impaired, that, unless by an unusual effort, a sufficient expansion of lung does not take place to admit the necessary impulse being given by the air to the tubes and cells of the organ.

It is in such cases that the very characteristic pungent heat of skin, so often, and so fortunately, directs attention to the chest. This pungent heat, though not necessarily present, is very rarely absent so long as any portion of lung continues to be in the first or crepitating stage of pneumonia.

20. *Physical examination of the chest does not enable us to distinguish an advanced stage of pneumonia with considerable bronchitis from pneumonia with breaking up of the lung; a difficulty the more embarrassing, inasmuch as the former may pass into the latter.*

Here we must be guided chiefly by the history and general symptoms. The phthisical aspect, the cachectic or exhausted condition, or the intemperate habits of the individual will afford us some help in arriving at a correct diagnosis.

21. *When the anterior and inferior portion of the left lung is consolidated by pneumonia, percussion may produce good resonance, in consequence of the proximity of the flatulent stomach, and thereby throw us off our guard. When pneumonic consolidation takes place anteriorly and inferiorly, and even posteriorly, on the right side; a remarkable degree of resonance is occasionally elicited in a highly tympanitic condition of the intestines. Under precisely similar circumstances, auscultation may detect a well-marked modification of amphoric respiration, and metallic tinkling, to a considerable height in the chest; thereby leading to the erroneous conclusion that pneumothorax is present.*

The respiration acquires its amphoric character, by reverberating through the solid parts to the inflated bowels: the metallic tinkling, developed below the diaphragm, acquires its intensity, by reverberating in the opposite direction.

The following case presents a very remarkable modification of this source of fallacy.

“CHARLOTTE C——, aged 19, was admitted into our Summer Clinical Wards, complaining chiefly of some pain and tenderness over the whole of the abdomen, but especially on the right side, and the bowels appeared to be greatly distended with flatus. These complaints were of a month’s standing; but about three months prior to admission, she had had an attack of inflammation within the chest, and was still harrassed by a short dry cough.

“On the right side of the chest, anteriorly, there was increase of resonance as high as the third rib; and even to the apex, the resonance was greater than normal: dulness at the base of the same lung posteriorly.

“Respiration was puerile in the apices of both lungs anteriorly, mixed with sibilant rales in the right. On the right side, as high as the third rib, slight and distant crepitation, with a metallic state of the breathing; and when she spoke or coughed similar amphoric sounds were to be heard. Accompanying these amphoric sounds we had the *tintement métallique*.”

On inspection after death, the pleuræ on both sides of the chest were adherent; but the diaphragm had been raised up high within the chest, partly by the inflated bowels, and partly, on the right side, by old adhesions between it and the base of the lung. A vast fæcal abscess extended from the pelvis to the under surface of the diaphragm on the right side. From this inflated abscess, or from the distended intestines, or from both, had originated the great resonance, the amphoric sound, and *tintement métallique*.

22. *Physical examination cannot determine whether pneumonia, in any of its forms, have, or have not, supervened upon tubercles; although the prognosis in the two cases would be very different.*

23. *I very much doubt whether physical examination can, in any instance, determine with certainty, the existence of simple tubercles in the lungs.*

In a former Paper, I communicated a case which very well illustrated this ; and the following is to the same effect.

“ ADA H——, aged 17, admitted under Dr. Addison. She was admitted with what appeared to be symptoms of fever. The chest was resonant on percussion, and the respiration puerile. It was supposed that the breathing was somewhat harsher at the left apex, than at the right. There was no cough or expectoration. On the following day, the case proved to be one of hydrocephalus ; and on the next day she died. At the post-mortem examination, numerous miliary tubercles were found scattered throughout the lungs : they were more numerous in the upper and middle lobes than in the inferior ; and in the right lung, than in the left ; the latter being the lung in which the respiration was considered harsher. The pulmonary tissue surrounding the tubercles was perfectly healthy.

24. *We may be called to a case of pleurisy, before a single physical sign has been developed.*

In such a case, it may be doubtful whether the pain arises from pleurisy, rheumatism, neuralgia, or the approach of shingles.

A very good example of the latter source of fallacy presented itself in the case of Sarah F——, aged 18, admitted into the Summer Clinical Wards. It will be found accurately described in the clinical book by my clerk, Mr. Greenwood.\*

25. *When pleurisy occurs low down in the angle between the ribs and diaphragm, and especially when situated anteriorly, a considerable period, perhaps several days, may elapse, before auscultation can detect either pleuritic rubbing, ægophony, bronchophony, or tubular respiration ; whilst percussion proves fallacious, in consequence of the presence of the liver on the right, and of the inflated stomach on the left side.*

Doubtless this source of error is connected with the relative positions of the effusion, the lung, and the parietes of the chest ; but without attempting any elaborate explanation, I

\* The Summer Clinical Wards were committed to my charge ; and were appropriated exclusively to diseases of the chest. Dr. Novelli, Mr. Greenwood, Mr. Walter Johnson, and Mr. Howard Johnson, were my clinical clerks ; and better I could not have had.



content myself by simply vouching for the fact, in my own experience. I have known such cases mistaken for spasms, for neuralgia, for hepatitis, for splenitis, for peritonitis, and, in consequence of pressure of the abdomen causing a descent of the false ribs, for enteritis. A knowledge of the fact alone will go far to preserve us from error; and when the suspicion exists, a long-continued application of the naked ear to the chest will often succeed in detecting a little transient graze, or pleuritic crepitation, sufficient to greatly strengthen that suspicion. The lapse of one, two, or three days will, in general, place the matter beyond dispute.

“JEREMIAH —, aged 23, ill two weeks; was admitted into Job Ward under Dr. Addison. He complained of acute pain beneath the right nipple, when a deep inspiration was taken; of headache, pains in the limbs, and extreme prostration. There was a frequent harrassing cough; copious expectoration of a frothy mucus, tinged with blood; the skin was pungently hot; and the tongue was loaded with a moist white fur.

“*Physical examination of the chest.*—It was deep and well formed. The movement of the right side was instinctively checked during respiration. Vocal fremitus good in all parts. From a peculiarity in the configuration of the thoracic parietes, not very unfrequently met with, percussion elicited in all parts very imperfect resonance. Dulness, it is true, was more strongly marked beneath the right mamma, and below the scapula of the same side, than in the corresponding parts of the left lung; but the presence of the liver renders this sign fallacious, and but imperfectly diagnostic. The signs afforded by stethoscopic observation were, if possible, still more unsatisfactory. Where the sounds of respiration could be fully heard, with the exception of occasional bronchitic whines, they were normal. At the lower parts of both lungs the patient will not permit the air fully to enter the cells; and even after coughing, nothing, save a slight roughening of the respiratory sounds before, and a tendency to tubularity behind, in the right lung, could be detected. The voice was triflingly modified at the base of the right lung: it was bronchophonic in character.

“The case was diagnosed to be phlegmasial fever, with broncho-pneumo-pneumonic complication; and Dr. Addison ventured to prophesy that in a few days, all the stethoscopic signs diagnostic of such pulmonic disease would present themselves.

“The treatment consisted in moderate depletion, local and gene-

ral with small doses of antimony, opium, and calomel combined in form of pill.

"On the second and third days no change took place in the physical signs, save that on the latter, after long listening, a soft rubbing sound, attendant on inspiration, was occasionally heard in the angle below the right mamma.

"On the fourth day, a distinct to and fro sound, accompanied by moist crepitation, had become audible in the right submammary region. The friction sound was most marked to the right of, and on a level with, the nipple. It diminished in intensity as the angle was approached, where it was replaced by fine crepitation. At the base of the lung behind, some minute crepitation had arisen; and immediately below the scapula a soft brushing to and fro sound could occasionally be heard. This examination was made at 11 A.M. In the evening of the same day the patient was re-examined.

"In front, little change had taken place excepting an increase in degree of the previous signs. The friction sound was more harsh, and the crepitation had become larger. Behind, harsh grating to and fro sounds—with which was mingled, crepitation in various degrees, large and small, extending from the base of the lung over the lower half of the scapula and round to the axilla—had become audible. Diffused rhonchi were to be heard in various parts. All the signs, in short, that are recognised as diagnostic of bronchitis and pleuro-pneumonia had manifested themselves."

The further progress of the case is detailed in the clinical books.

"EMMA H—, aged 19, a tolerably healthy-looking girl, was admitted into the Clinical Ward, under the care of Dr. Addison, Nov. 26, 1845. She had been labouring, for several months, under some obscure affection about the pelvis, which, after careful examination, appeared to be probably nothing more than hysterical. Three weeks after her admission, she was attacked with a severe rigor, followed by great heat and dryness of skin; these symptoms were succeeded, on the following day, by an acute pain in the right side of the chest, below the mamma, increased by inspiration, and attended with a short hacking cough and all the ordinary symptoms of pyrexia. The chest was attentively examined by Dr. Addison, myself, and others; but none whatever of the physical signs of pleurisy could be detected.

The next day she had great anxiety of countenance, distress of breathing, and, in short, an aggravation of all the symptoms. On

listening for some time, towards the base of the right lung posteriorly, I thought that a pleuritic rub, or friction sound, was occasionally audible at the end of a forced inspiration; but Dr. Addison, after a protracted examination, said he could not hear it.

“The following day, viz. the third from the attack, there was no doubt as to its existence; it having become constant, although heard over a limited space, and unaccompanied by the signs of serous effusion.”

Some time ago, I attended a very instructive case of this kind, with Mr. Busk and Mr. Bell. It occurred in the person of a foreigner. He was supposed to be suffering from acute hepatitis. The chest had been carefully examined, and no physical sign of disease within that cavity could be detected; the dulness, present on percussion, being attributed to the liver. I repeated the examination; but although persuaded that it was a case of pleurisy affecting the angle, and, from the pungent heat of the skin, that the pleurisy was associated with pneumonia, I could detect no sign whatever, except some dulness on percussion, and there was neither cough nor expectoration. A few days removed all doubt about the matter.

I may observe, in concluding my remarks on this proposition, that when pleurisy has its seat in the parts alluded to above, it constitutes by far the most painful, and perhaps the most dangerous form, of the acute and sthenic disease. It is the paraphrenitis of the ancients; a disease which, according to them, consisted simply of inflammation of the diaphragm. This, however, is not correct; for the pleura covering the diaphragm, is often inflamed without giving rise to the dreadful suffering observed in paraphrenitis; whereas, when acute and sthenic inflammation attacks the pleura, where it is reflected from the diaphragm to the ribs at the base of the chest; and thus involves both the diaphragmatic and costal pleuræ at the same time; then it is, that we have such intense suffering, and such an expression of agony in the countenance, as forcibly to remind us of the *risus sardonicus* of the older writers.

26. *When the effusion into the chest is of the purely serous kind, or when the proportion of albuminous material is very inconsiderable, the fluid gravitates to the floor of the cavity, and*



*may, unless very abundant, entirely escape detection, either by auscultation or percussion.*

The lung rests, as it were, on the surface of the fluid; it still admits air, and consequently general expansion; it still continues to apply itself more or less extensively to the parietes; and consequently, neither ægophony, bronchophony, nor tubular respiration, is necessarily present, in a marked degree: whilst any slight dulness of sound on percussion is rendered equivocal by the liver on the right, and by the flatulent stomach on the left side. Neither does vocal vibration necessarily cease under such circumstances. The correctness of this proposition, is not, I am aware, generally admitted; any unexpected serous effusion being, under such circumstances, supposed to have taken place immediately before dissolution, or to be purely cadaveric. Experience, however, leaves me no room for doubt about the matter. In such cases, we must found our opinion, or rather our suspicion, upon the history and general condition of the patient. We know that effusions of the character described, are most likely to take place in diseases of the heart; in cachectic and dropical persons; in those suffering under Bright's disease, or the sequelæ of scarlet fever. I may, nevertheless, be permitted to observe, that when there has been a suspicion of the presence of serous fluid without any well-marked ægophony, bronchophony, tubular respiration, or unequivocal dulness of sound on percussion, by placing the patient in a sitting position, and applying the ear for a considerable time to the posterior and inferior part of the chest, and in the meantime moving the patient's body several times to nearly the horizontal position and back again, and directing him to cough forcibly, I have succeeded in eliciting a distant tubular respiration, sufficient to indicate partial compression of the lung.

In the case of John B——, aged 49, affected with Bright's disease, the signs of effusion into the right chest were very unsatisfactory; although, on a post-mortem examination shortly afterwards, it was found to contain a large quantity of serum.

Frederick S——, aged 24, laboured under disease of the

heart of long standing, but greatly aggravated by bronchial complication. Bronchial râles were loud throughout the chest; the right side was generally dull on percussion; there were some bronchophony and very imperfect respiratory murmur; the whole of these signs being most strongly marked posteriorly and inferiorly. *Vibration was nearly perfect.*

A difference of opinion arose, whether the signs depended upon old pleuritic adhesions, or upon serous effusion and great congestion. Being myself of the latter opinion, I had a fine exploring trochar introduced between the eighth and ninth ribs. A little fluid trickled out of the minute canula, immediately followed by the entrance of air into the chest: the body was then inclined to the right side, when about a drachm more escaped; upon which I immediately had the canula removed. The question of adhesion or effusion was thus decided; but how much serum remained, and had gravitated towards the diaphragm, can only be surmised.

27. *When serous effusion is very considerable, giving rise to unequivocal bronchophony, tubular respiration, and want of resonance and vocal vibration, physical examination has repeatedly led to a mistaken belief, that these signs resulted from pneumonic or other consolidation of the lung.*

A few years ago, a little girl was admitted into the hospital, under my care, labouring under great oppression of the chest. Amongst other signs and symptoms, I found great dulness on percussion of the right side, tubular respiration, and so clear and powerful a bronchophony, that I did not hesitate to pronounce the case one of pneumonic consolidation. She shortly died; and I found the affected side of the chest full of fluid. More attention to the history and progress of the case would have saved me from this error.

Some time ago, a middle-aged woman was under my care in the hospital, who had diseased heart, and, as I believed, effusion into the right chest. She was seen by another physician, a zealous stethoscopist, who, without hesitation, and with considerable confidence, declared the case to be one of pneumonic consolidation. I introduced a trocar, and proved, beyond all dispute, that the pleural cavity contained a large quantity of fluid.

“In reference to the apparent paradox, that, in certain conditions of the chest, the vibrations of its parietes, ordinarily produced when the patient speaks, can no longer be felt; whilst, under the same circumstances, loud bronchophony is audible; we must bear in mind, that there is no necessary connection between the two results. Sound is transmitted through bodies by a successive motion of its molecules, the whole mass not necessarily undergoing any change of place; whilst the movement appreciable by the hand is the change of place which an entire body undergoes. As a familiar illustration; suppose the end of a deal rod is in contact with the ear, and let a trembling motion be communicated to it, the movement is readily felt by the means of common sensation; but no sound is heard, except that of friction, produced by the end of the rod on the ear: here we have motion without sound. Let the rod come to rest, and be firmly applied to the ear, and apply a vibrating tuning-fork to the other end; the sound yielded by it is transmitted by the rod, yet without any appreciable movement of the rod. Not only does the immobility of the rod not prevent the transmission of the acoustic vibrations; but the more firmly the rod is held, the more distinct is the sound. It is true that deep sounds, having also great intensity, do produce a visible vibration of the mass which transmits them; but this arises from the gravity and molecular cohesion of the masses so affected, being less, equal to, or only slightly greater, than, the acoustic force. If, from any cause, the body transmitting acoustic vibrations be fixed; there may be no perceptible movement of its mass: such is the condition of the chest when full of fluid, or affected by pleuritic adhesions; the bronchophony, in such cases, may be remarkably loud, and yet the hand feel no vibration.”\*

28. *Even in ordinary acute pleurisy, when the albuminous material thrown out is more abundant; when, in consequence, the lung is held more in contact with the ribs; and when, instead of the whole of the fluid gravitating to the base of the chest, it is more or less confined within the meshes of the solid deposit; it not unfrequently happens, that auscultation and percussion fail*

\* Dr. Gull.



## 24 *Dr. Addison on the Difficulties and Fallacies attending*

*to determine, with certainty, whether the physical signs present result from that disease, or from pneumonia advanced to hepatisation, or from a combination of the two.*

An instance of this kind has recently been witnessed by some members of the Society, in a patient under the care of Dr. Babington.

Were I addressing gentlemen altogether unacquainted with the use of the stethoscope, it might be excusable to point out in detail the means by which we may in general arrive at a correct diagnosis; but as that is not the case, I shall content myself with offering a caution not to mistake the crepitations so often attendant upon recent pleuritic effusion for the crepitating and mucous râles of broncho-pneumonia; nor to imagine, that the physical condition of the chest, and physical signs, are the same, when the effusion consists of pure serum, and when it is made up of the ordinary mixture of serum and solid albumen, usually met with in acute pleurisy occurring in persons of good constitution; the physical signs of the former being, for the reasons stated, much more equivocal and inconclusive than those of the latter.

Although I have just alluded to certain crepitations detected by auscultation, not only in cases of acute, but of ancient pleurisy also; and although I believe that little doubt is now entertained, as to their occurrence, in both of these morbid states; I do not think it is by any means satisfactorily established, whether these crepitations result from the mere movements of the adhesions themselves, or from some mechanical change or impediment in the adjacent lung.

The following communication from my friend Dr. Barlow bears somewhat upon this question:—

*“ Union Street, Southwark, June 26, 1846.*

“ MY DEAR DOCTOR,

“ I much regret that there has not been a complete report of the case of the man who died at No. 3 Lazarus Ward, last Monday, and was inspected on the following day. I trust, however, that the following particulars may serve your purpose.

“ This patient was admitted under my care with hæmo-

ptysis, about the end of February last: there were also strong reasons for believing him to be phthisical, although the auscultatory signs were not unequivocal. Soon after his admission, he was transferred to the care of Dr. Bird (whilst I had charge of the Clinical Wards) till the end of April, when he again became my patient; and when there were undoubted signs, both topical and general, of advanced tubercular phthisis. Some time before his death, his position, respiration, and the seat of pain, led to the diagnosis of diaphragmatic pleuritis; but there was, moreover, a defined pain and tenderness over a space nearly half-way between the ensiform cartilage and umbilicus, about the size of a crown piece. Here a crepitus could be distinctly felt by the hand; and upon applying the stethoscope to the part, a crepitation could be plainly heard with each inspiration and expiration. Upon one occasion, a few days before the death of the patient, this crepitation so closely resembled that produced by bronchitis of the smaller tubes, that I made the remark "there is a mucous rattle in the peritoneum." And this resemblance was also noticed by Dr. Bevan, who was present, and by my reporters, Messrs. King and Rump. Upon inspection, in addition to the disease diagnosed in the chest, there was found a layer of fibrinous effusion on the surface of the parietal peritoneum, corresponding to the situation in which the stethoscopic phenomena had been noticed, and a similar layer on the apposed surface of the liver.

"I am yours, very truly,

"G. H. BARLOW."

*Dr. Addison.*

29. *When a patient presents himself, with a febrile disorder of any kind, we may, on examination, detect dulness of sound on percussion, tubular respiration, bronchophony, and a râle not distinguishable from that form of mucous or sub-mucous crepitation so commonly observed in the hepatization of acute pneumonia; and yet physical examination shall not enable us to determine whether the chest affection be recent, or of ancient date. When a portion of lung has been compressed by pleuritic effusion, and has been prevented from expanding again by surrounding pleuritic adhesions, the physical signs may remain*

*permanently, and be found to resemble precisely those which result from recent pleuro-pneumonia.*

This actually happened in the case of Charlotte C——, already mentioned. There was considerable obscurity about the case altogether; but as she was feverish, and had a frequent hacking cough, and furnished the physical signs just enumerated at the lower and posterior part of the right chest, I scarcely hesitated to conclude that she had pleuro-pneumonia, affecting that part. On inspection after death, we found the morbid changes above described, of ancient date; and without any trace whatever of recent inflammation in any of the structures involved.

In a case of this kind, the stethoscopist is much more likely to err than the man who repudiates the instrument altogether; since the former would be very apt indeed to conclude that recent pleuro-pneumonia existed; whilst the latter, utterly ignorant of the treacherous physical signs, would never entertain the least suspicion of any thing of the kind.

30. *Experience leads me to the conclusion, that physical examination cannot, in every instance, distinguish the rub and crepitation of pleurisy situated at the lowest part of the chest on either side, but especially the right, from similar sounds resulting from recent adhesions between the liver and diaphragm; or between the liver and abdominal parietes: neither can auscultation and percussion at all times distinguish some of the croaking sounds developed in the bronchi, from a pleuritic rub; the sounds often closely resembling each other, and both occasionally communicating a manifest vibration to the hand applied to the parietes of the chest.*

I met with a case of the abdominal friction sound alluded to above, in a gentleman who died of malignant disease of the liver; and, more recently, observed the same thing, in a patient whom I attended with Mr. Fidler of Peckham. One of the best illustrations, however, occurred in our clinical patient, Eliza W——, aged 22. This poor creature laboured under a sad complication of disease. She had phthisical disorganization of both apices of the lungs, an enlarged liver,



and the morbid kidneys of Bright's disease. In the progress of her case, she was attacked with acute pain and great tenderness over the region of the liver, extending up beneath the margin of the ribs, first of the right, and afterwards of the left side. The crepitation of palpation could scarcely be felt; but a strongly-marked friction sound was heard during the acts of inspiration and expiration, perfectly identical with a pleuritic friction sound. Indeed, it extended so high into the chest on the right side, that it was doubtful whether pleuritis, as well as peritonitis, was not present. Inspection after death proved that there was no recent pleurisy; but "the abdomen contained about a pint of pale straw-coloured serum. The liver weighed six pounds three ounces, extended as high as the third rib, as low as the umbilicus, and across to the left hypochondrium; its upper surface, especially of the right lobe, was coated with a layer of recent lymph; there were also recent adhesions between it and the diaphragm, and the anterior parietes of the abdomen. Intestines slightly reddened, connected together by very soft adhesions, slightly coated with lymph: all these were more apparent on the right side than on the left. Kidneys slightly enlarged, together weighed ten ounces; tunic adherent at some parts, surface irregularly contracted; cortical substance, composed of fatty-looking matter, in which all striated appearance was nearly lost; tubular portion pale; pelvis normal; no fat obtained by heat. Bladder healthy."

31. *As simple pericarditis is rarely attended with pain; and as the other symptoms of that disease are either unsteady or equivocal; the physical signs are chiefly to be relied upon in forming a diagnosis. Nevertheless, when effusion has taken place to a certain amount, the friction sound commonly disappears; and auscultation then fails to recognise the disease.*

The rheumatic ailment of the patient, the more or less distant sound of the heart, the dulness of sound, especially towards the apex of the left lung, and the usually soft and compressible, but slightly jerking, pulse, may, perhaps, lead to a strong suspicion; but auscultation cannot, in such a case, positively confirm it. Of course, the more considerable and more rapid the effusion, the sooner, and more completely, does

the friction sound disappear; whence the greater difficulty of diagnosis in cachectic and dropsical than in otherwise healthy subjects. I may observe, that when, from the quantity of fluid effusion, the ordinary friction sound is no longer heard; by applying my ear to the chest, and retaining it there for some time, I have occasionally been able to detect, once or oftener, a single slight and transient pericardial rub, or rather brush, quite as decisive, in a diagnostic point of view, as the most perfect double pericardial rub.

A curious case of this kind occurred in the person of M——, late porter to the hospital. When requested to see him by Mr. Stocker, he was labouring under severe pleurisy, which was obvious enough; but on applying my ear over the region of the heart, I imagined I heard once such a transient single rub or brush as I have just alluded to. Believing that I had made an important discovery, I carefully repeated my exploration; but although I continued to listen a considerable time, I could never hear it again. He presently died; and, on examination, we found universal and intense pericarditis, with unusually copious sero-albuminous effusion.

32. *Enormous accumulations of fluid in the pericardium cannot by physical signs be distinguished at all times from effusion into the cavity of the pleura.*

33. *When the pericardial friction sound is single, auscultation may fail to distinguish it from a valvular murmur; and especially so, when the single friction sound is heard most distinctly over the situation of the valves.*

34. *So far as auscultation is concerned, the double friction sound of pericarditis, if heard toward the base of the heart, might be mistaken for the see-saw murmur of imperfect aortic valves, or vice versâ.*

The character of the pulse alone would be almost sufficient to decide the question.

35. *Auscultation does not at all times enable us to distinguish a friction sound produced within from a friction sound produced without, the pericardium; i.e. friction between the pericardial*

*surfaces from friction between the loose pericardium and lung, or parietes of the chest.*

I have had more illustrations than one of this difficulty; and the following case, admitted into our Clinical Ward, I am disposed to think furnishes another.

"SAMUEL F—, aged 21, was admitted on Sunday night, the 7th of June, in a state of partial collapse. He had been seized about two hours after his meal with excruciating pain in the lower part of the abdomen: there were frequent, but ineffectual, efforts to vomit. The pain extended so as to involve all parts of the abdomen, which was exquisitely tender on pressure. He gradually sank into a semi-comatose state; the extremities became cold; respiration was hurried, and effected with great apparent pain; the pupils were contracted; consciousness of surrounding objects was imperfect.

"*Diagnosis*—Perforation of the stomach.

"The chest being examined, gave the following stethoscopic signs:—Over the aortic valves was heard a soft brushing to and fro sound, accompanying each systole and diastole of the heart. The sounds of respiration anteriorly were normal. Behind, at the base of the right lung, a harsh grating rub met the ear, synchronous with inspiration and expiration: elsewhere, breathing was normal.

"The patient sank rapidly, and died the following day at twelve o'clock.

"*SECTIO-CADAVERIS*.—A perforating ulcer in the lesser curvature of the stomach. Universal peritonitis.

"Lungs and heart perfectly healthy. Between the right pleura and pericardium there existed a band of old adhesions, which had in all probability given rise to the anomalous *bruit* heard with the heart's action. Both lungs overlapped the heart.

"The peritoneal coverings of the liver and diaphragm were coated with recently-effused albuminous deposit. The ascent and descent of the diaphragm during the respiratory act, bringing these two surfaces into contact, had caused the rubbing to and fro sound heard at the base of the right lung."

36. *A sound closely resembling a valvular murmur appears not unfrequently to be produced by the stroke of the heart against a portion of lung, interposed between it and the parietes*



of the chest. Under such circumstances, auscultation may lead, and I believe often has led, to the erroneous conclusion, that the heart is diseased, when it is perfectly normal in every respect.

This sound is most frequently heard at some point in the direction of the edge of the left lung, where it overlaps the heart, to the left of the sternum, from about the second or third to about the fifth rib, and especially somewhere between the second rib and the neighbourhood of the left nipple. Its tone somewhat resembles that of a *bruit de rape*; but, at the same time, it communicates a sense of dryness and crumpling, different from the rigid squeezing or grating observed in the ordinary *bruit de rape*. It is also more variable, both in its development and its extent. We find it different at different moments, and during the different movements of the chest; and it may occasionally be made to disappear altogether, by a deep and forcible inspiration, so long as that inspiration is maintained by the individual. On the other hand, its extent or prolongation varies in different cases; or even at different times in the same case; apparently according to the extent or size of the portion of lung which happens to be struck by the heart at each systole of the organ. In a few instances I have found the sound, to a certain extent, double; the second, or that attending the diastole of the heart, being in general, perhaps, more limited and indistinct than the first. I believe this sound, which I have long observed, and now attempt to describe, to be that recently pointed out by my colleague, Dr. Barlow. It may possibly be that also noticed by Dr. Latham as frequently present in phthisis.

I have met with it occasionally under the clavicles, resulting probably from the impulse of the aorta or large arteries; although, at first, I was led to entertain serious apprehensions of the existence of aneurism.

Instances of extrinsic cardiac murmurs are, in truth, exceedingly common, and ought to be carefully borne in mind in exploring the chest. The following case is probably one of this kind.

“JOSEPH C——, aged 24, was admitted into our Clinical Ward on the 8th of July. He complained of dyspnoea, and a painful

feeling of weight at the bases of both lungs when a deep inspiration was taken. The history was that of recent supervening upon old pleurisy. The stethoscopic signs indicated phthisical disease at the apex of the right lung, pleuritic adhesions below the left mamma, and consolidated lung with pleurisy and dilated bronchial tubes at the left base posteriorly. The heart's position in the chest, its impulse, and rhythm, were perfectly normal: no *bruit* accompanied either sound.

"But little change, save that of a gradual extension of the pleurisy, took place in the general or physical signs, until the 24th. On this day, the ear being placed over the aortic valves, a rubbing sound was heard accompanying the heart's action. Inasmuch as there was no symptom whatever of any affection of the pericardium, the nature and cause of the *bruit* underwent a rigorous investigation. It was found not to be persistent, but to vary as the act of respiration varied. The patient was ordered to take a full inspiration and hold his breath. The heart's sounds were then heard, somewhat feeble and distant, but perfectly normal. The lungs were then allowed to collapse partially, and the breath was again held. A distinct double *bruit* became audible, accompanying the systole and diastole of the heart; a loud, harsh *bruit de rape* with the systole; a soft brushing sound with the diastole. The act of expiration being fully effected, and the breath once more held, the heart was heard to beat loudly and distinctly, and nothing abnormal could be detected in its sounds.—The patient is still in the hospital, and the phenomenon persists unchanged."

For the particulars of the next case, I am indebted to my friend Dr. Gull.

"W. H.—, aged 27, admitted, under Dr. Barlow, April 22, 1846: engineer by employment; single; very muscular; habits irregular. The first symptoms of his present disorder came on about three days previous to his admission; his legs at that time beginning to swell. For a few days after his admission, he went on as usual with cases of renal anasarca; the urine being loaded with albumen, but not tinged with blood. From some imprudent exposure he became feverish; great dyspnœa supervened; his urine was scanty, and seemed little else than pure blood.

"There were signs of universal bronchitis, with imperfect respiration, and indistinct tubular breathing at the base of the right lung. The next day, his dyspnœa continued very urgent: great pain across the præcordia, extending into the left side: impulse of

heart indistinct, with extensive dulness; sounds indistinct. On passing the stethoscope up to the space between the second and third costal cartilages, a well marked to and fro sound was audible, continuing during the suspension of respiration. He was too ill to examine the chest generally.

“Added to the above stethoscopic indications, regarded as indicative of fluid into the pericardium, was his waking from sleep in a sudden fright, his constant erect position in bed, the great feeling of oppression about the heart (to use his own words) ‘as if a cupping-glass were pressing over the spot.’

“The reasoning on the case was something in this manner:—He has renal disease, of an acute character; nearly entire suppression: we have the usual renal catarrh of the bronchial tubes, pleuritic effusion of right side, acute pleurisy of left side, and pericarditis. In these renal cases we have a considerable quantity of fluid with the plastic matter: from his erect position, the more fluid parts would gravitate, leaving the surfaces of the pericardium in apposition above, where there is audible a distinct to and fro sound: now this may be pleuritic, but it continues unaltered when the patient holds his breath. Thus again the indistinctness of the sounds and imperfect impulse would coincide with fluid in the pericardium. There seemed but one sign opposed to such a view, and that was the large volume and firm character of the pulse, which peculiarity seemed explicable on the well-known concomitance between hypertrophy of the left ventricle and renal disease.

“*SECTIO CADAVERIS.*—General œdema of the body; the results of acute inflammation in the left side, the pleura containing a considerable quantity of serum, turbid from flakes of fibrin. The pleura was covered with a layer of plastic lymph; and between the second and third ribs the fibrin was so situated on the pleura pulmonalis, as to be influenced by the movements of the heart, and thus produced the to and fro sound, which could be artificially produced at the post-mortem examination by traction of the pericardium. The pulmonary tissue of the left lung was in the first stage of pneumonia (œdema). On the right side, the upper lobes of the lung were emphysematous; the lower lobes were devoid of air, from compression of the clear serous fluid in the pleural cavity; no signs of recent inflammation. The bronchial tubes, on both sides, contained a large quantity of viscid mucus.

“Heart.—Right side very much distended and pushing the left side backwards: (did not this render the impulse so indistinct, and



cause the increased dulness?): left side hypertrophic: weight of heart, fourteen ounces and a half. Several ounces of clear serum into pericardium.

"Liver enlarged and congested; weight, six pounds one ounce.

"Spleen.—Weight, fifteen ounces; granules indistinct.

"Kidneys very large; weight, twenty-five ounces and a half; dark chocolate; tissue soft."

A very curious modification of extrinsic cardiac murmur occurred in Miriam Ward a few years ago. A young female, with diseased lungs, furnished, on auscultation, a double murmur of the character described. The sound was very strikingly developed, both in the systole and diastole of the heart; but mixed up with a remarkable moist sucking sound, somewhat resembling what would be produced by the application and up-and-down movement of the leathern plaything called a "sucker." The diagnosis formed was vomica, with adhesion to the pericardium; and this was found to be correct on inspection after death.

The only doubt remaining in my own mind in this matter is, whether the extrinsic cardiac murmurs, which I have been in the habit of calling *pulmonic*, may not in every instance be associated with some slight or circumscribed adhesion, or albuminous deposit.

37. *Auscultation fails to distinguish an aortic murmur depending upon organic change from that which results from other causes.*

The murmur from diseased valves cannot always be distinguished from the murmur so often attendant on chlorosis, diseased spleen, or other form of anæmia. The general history, coupled with the character of the murmur, will very commonly decide the question.

38. *Auscultation alone cannot determine, whether what has been called a mitral murmur result from organic or functional change.*

Auscultation cannot distinguish the mitral murmur of endo-carditic disease from the temporary mitral murmur occasionally met with in chorea.

39. *No physical examination will enable us, in many instances, correctly to analyze the morbid condition of a heart, whilst that organ continues to be greatly overcharged with blood.*

Hence the prudent rule, always to wait a certain time before giving a positive opinion. This precaution applies more especially to cases in which severe bronchitis complicates the cardiac affection.

40. *In certain diseases of the heart, especially when the organ is enlarged, it is difficult, or impossible, accurately to localize the murmurs, however distinct and obvious these murmurs may be.*

The two following cases have recently come under our observation; and although, perhaps, not very strongly marked, are, nevertheless, instructive.

“JAMES T——, aged 56, a tanner by trade, residing in Bermondsey. A year and a half ago, after exposure to bad weather, he became affected with cough, attended with expectoration and hoarseness of voice. These symptoms continued, sometimes aggravated and sometimes remitting in severity, till thirteen weeks ago, when he became much worse, suffering from occasional attacks of dyspnœa and œdema of the extremities.

“On admission, the positive physical signs of thoracic disease were as follows:—Dulness, extending from the left nipple to the margin of the ribs; bounded by the sternum to the right, and posterior line of the left lateral region, to the left. Absence of vesicular murmur over the same space. Large mucous crepitation heard irregularly over various parts of the lungs. *Action of heart very irregular; frequently intermittent; contraction feeble.* Every now and then a stronger beat is made; and at such times a loud *bruit* is heard with the first sound. This *bruit*, perhaps loudest over the aortic valves, may be traced almost as far down as the margin of the ribs, and along the great vessels up to the clavicles. It is difficult to say in which direction it is heard more distinctly. Pulse 100.

“The condition of the heart, on post-mortem examination, was the following:—Great hypertrophy of both sides; weight, twenty-four ounces: right and left auriculo-ventricular orifices large: pulmonary artery thickened, having very much the appearance of the aorta; its valves healthy: mitral cords stretched; curtain thickened somewhat: aortic valves rigid from a large deposit of bony

matter, extended and leaving a mere slit for the passage of the blood. The pulmonic signs discovered by auscultation, which had led to a suspicion of effusion into the left chest, were all due to the great hypertrophy of the heart."

"JAMES A——, aged 24, ill four years: a sailor, unmarried, living at Woolwich. He had never had any serious illness until four years before admission, when he fell into the water, and had an attack of rheumatism, which lasted two months. After this, on making any exertion, he felt palpitation, dyspnoea, sensation of weight in the chest, with pain and tenderness at the epigastrium.

"When admitted under Dr. Addison, February 4, 1846, his aspect was tolerably healthy: he had a slight cough, with white, scanty sputa. *With the exception of an occasional intermission, the pulse was regular.* Impulse of heart and præcordial dulness increased; mucous râles in various parts of the chest; *bruit* on first sound of heart below mamma, second sound scarcely audible: there was severe pain in the loins, and pain and tenderness at the epigastrium. It was at first supposed that the symptoms were produced by simple hypertrophy and dilatation; but shortly afterwards it was discovered that the *bruit* was loudest at the epigastrium, where a tolerably well-defined pulsating tumor was felt. The *bruit* could not be heard posteriorly, and was constant in all positions of the patient. The case was now supposed, by Dr. Addison, to be either aneurism of the abdominal aorta; or adhesion between the cardiac and diaphragmatic pericardia. The symptoms which ensued, seemed to confirm the former opinion. The cough became loud, frequent, and violent; the patient declaring that he was trying to cough up something which he felt in his throat. The food appeared to stop at the epigastrium before it passed into the stomach; and on two or three occasions it regurgitated soon after it had passed down the gullet. The voice became thicker; he felt choked when he lay on his back; pain and oppression at the epigastrium increased. During this period the *bruit* and pulsation remained unaltered. On the 4th of July he began to cough up blood, which gradually increased in quantity; and on the 18th of July he died.

"SECTIO CADAVERIS.—Apoplexy at the base and apex of the right lung posteriorly, and, to a less extent, at the posterior part of the left lung: pericardium connected to the heart by old adhesions; right auricle dilated; right ventricle hypertrophied and dilated; tricuspid valve opaque, thick, pliable, with small granulations in its auricular surface; pulmonary crescents healthy: left auricle large; some



small bony projections on auricular surface of mitral; orifice of mitral greatly contracted; left ventricle dilated, its walls of usual thickness; mitral valve rigid and opaque, its cords contracted, thick, and firm. The thick, hard mitral formed a projection into the ventricle, which pressed against that smooth track of lining membrane which leads up to the aorta, the membrane at the point of contact being thickened and hard. Small granular excrescences on the ventricular surface of the aortic valves: slight atheromatous deposit in the descending aorta, and also in the pulmonary arteries, which were thickened and enlarged. The circumference of the aorta, just above the valves, was 2·63 inches. No aneurism, nor any abdominal tumor, pressing on the aorta."

41. *Auscultation cannot distinguish the murmur of an aneurismal, or otherwise diseased artery, from the murmur occasioned by some source of pressure upon the same vessel.*

42. *Physical examination does not enable us to distinguish congenital malformation from disease of the heart or large vessels.*

There are, however, many exceptions to this proposition.

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To have treated fully the many important questions comprised in this communication would have rendered it totally incompatible with the means and object of the Society. This must plead my excuse for having preferred the greatest possible brevity to more elaborate detail. My object has been to acknowledge, and point out, the many difficulties and fallacies which I have myself had to encounter in the practice of physical diagnosis, without presuming, for an instant, to suppose that they would have proved equally embarrassing to other stethoscopists.

EXAMPLES  
OF  
**P T O S I S.**

WITH ILLUSTRATIVE REMARKS,  
BY JOHN F. FRANCE.

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UPON introducing a series of cases of the abovenamed disease, a word in explanation of my so doing may not be out of place. I may be thought to have trespassed on the physician's province, especially as, in the course of the Paper, it will appear that, in my own opinion at least, all, or nearly all the cases detailed were connected with morbid change within the skull. It must, however, be recollected, that cases are habitually allotted in accordance with the seat of the predominant symptom, as well as with that of the acute disease; and upon this principle—the same which subjects to the surgeon's care menstrual ulcers, hysteric joints, and amaurosis from visceral disorder—have I felt justified in retaining and treating paralytic ptosis.

The very direct bearing which certain of the phenomena of this disease have upon some points in the physiology of the eye, added to the intrinsic interest attaching to the causation and proper treatment of it, may form sufficient reason for the ensuing remarks. The narration of cases, even if tedious, is rendered expedient, as being the only means by which all readers can be enabled duly to estimate the validity of the writer's conclusions; at the same time it places it in the power of many to substantiate or impugn the correctness of his description.

In the first case I shall relate, the disease occurred in a milder form, and to a more limited extent, than in any other which has fallen under my observation. One circumstance rendered it peculiarly interesting; but it is to be regretted

that the patient discontinued attendance before her cure was complete.

## CASE 1.

SUSAN C——, aged 21, was a thin weakly girl, a servant of all-work, very insufficiently fed on two, and sometimes but one meal a-day, partaking of meat but twice or three times in the week; and occasionally suffering from menorrhagia. While scrubbing a floor, a week before her application at the Eye Infirmary, March 5, 1846, she was suddenly attacked with giddiness, pain at the forehead, and imperfection of sight. On her first visit at Guy's there was partial ptosis: she could only uncover about one-half of the right cornea, and could raise the right globe but very slightly. The remaining motions of the globe and lids were normal. The right pupil was of the same size as the left, and quite active; the vision of the right eye was stated to be impaired. She was ordered a compound calomel pill night and morning; disulphate of quinine with sulphate of magnesia in infusion of roses thrice daily; a purgative immediately; and a blister to be applied to the nape of the neck. When I last saw this patient, on March 25, she seemed to have gained increased power of elevating the lid and globe, but could not be reported cured.

The next two cases, though of much greater severity than the preceding, present a transitional condition between it and those which follow, in respect of one interesting feature.

## CASE 2.

GEORGE D——, aged 12, who had in infancy suffered from hydrocephalus, and possessed a somewhat disproportionately large head, presented himself at the Eye Infirmary on February 7, 1845. He was subject to frequent attacks of pain in the head, particularly just over the left supercilium, and sometimes at the corresponding point on the opposite side, and to frightful dreams, disturbing his sleep and causing him to scream violently. When most troubled with headache, often two or three times a week, he had had sickness and vomiting, apparently unconnected with errors in diet. His general aspect was indicative of debility: he was sallow; but, in manner, intelligent and lively. Nine days before application he was seized with headache and vomiting, which lasted, together with frequent twitching of the left eye-lid, for a couple of days, when the lid dropped, and he became unable to elevate it without



the assistance of the hand. Upon the patient's application, ptosis was complete, but he could slightly raise the lid on wrinkling the forehead by the action of the occipito-frontalis. Abduction of the affected eye was well performed, the eye then slowly returning towards, but not quite reaching, the centre: adduction, elevation, and depression, more especially the two latter, were impracticable. The pupil, examined separately, was active, but inclined to remain rather more dilated in the dusk than the opposite pupil. The sight of either eye was good: when both were employed, double vision resulted, unless the object were held to the temporal side of the left eye, so as to permit the axes to correspond.

The boy was put under the influence of mercury sufficiently to redden the gums, and repeatedly blistered; and was discharged, with restored power over the globe and palpebra, on the 24th of the succeeding month.\*

### CASE 3.

A. B——, aged about 28, a fine, healthy, temperate man, a sergeant of dragoons, was much exposed, about June 28, 1846, to the heat of the sun, at that time very intense, and became sensible of unusual torpidity and somnolency. On rising upon the day above mentioned he discovered that the motions of the left eye were disordered, and that confusion of vision was produced by attempting to employ both organs at once; and he imagined the dropping of the eyelid, which ensued, to have originated from his voluntarily closing it to avoid this inconvenience. He was very actively purged by the regimental surgeon, and obtained greatly-increased power over the eyelid; but was advised to apply at the hospital, and consequently attended at the Eye Infirmary on July 6.

The left superior palpebra could be raised sufficiently to uncover the larger portion of the cornea; though not nearly to the same extent as the right: the left globe rested in the position of slight abduction, and could not be adducted past the centre: the power of abduction was perfect: that of elevation and depression all but totally abolished. The left pupil, maintaining a state of greater dilatation than the right, was nevertheless capable of brisk contraction up to a certain point; and though vision was confused upon the simultaneous employment of both eyes, it was perfect

\* The above case, and the next but one, were inserted in the *Medical Gazette* of September 1845.

when either was used singly. The patient deemed himself, and appeared to be, in other respects well. I ordered him

Hydrarg. Chlorid. gr. i. Opii gr.  $\frac{1}{4}$ . bis die.  
 Applic. Empl. Lyttæ pone aurem sinist.

*July 30.* At the time of writing, this patient had re-appeared only once, and was then a little better.

The cases immediately subjoined exhibit examples of ptosis, as ordinarily met with, in its complete form. It will be seen, that two varieties of double vision occur in this disease; one arising from disagreement of the planes of the optic axes, as when an object is held towards the faulty side, but above or below the level of the eyes, one only of which can be raised or depressed accordingly; the other from defective convergence of the axes, as when the object is presented at the level of the eyes, but on the sound side, towards which the affected eye cannot follow it. The former may, for convenience sake, be termed vertical; the latter, horizontal or collateral diplopia. The duration of this symptom (independently of any restoration of the normal correspondence of position between the globes) is very uncertain; as the field of retina substituted by the displacement, for that previously acting in unison with the field at the visual axis of the healthy eye, may be admitted into similarly intimate association with the latter, at various periods from the occurrence of the derangement: this is incidentally noticed, now and then, in the succeeding cases. Sometimes it is never so admitted; as in a poor bookbinder, who fell under my observation many months after having a divergent strabismus artificially created in lieu of a convergent one, and who still felt severely the embarrassing effects of the diplopia which resulted.

#### CASE 4.

ELLEN M—, aged 25, applied to me July 21, 1845, and stated that, nearly three months before, she had been seized with headache, giddiness, tinnitus aurium, and insensibility, preceded for a fortnight by some pain across the eyebrows. The fit was of about half an hour's duration, and appears to have been of an apoplectic character; for, on recovering from it, the left superior palpebra

could not be perfectly elevated. In a week from the attack, during which this symptom gradually increased in degree, the power of raising the lid was completely lost, and was not subsequently recovered. A month previously to her application she was again affected with cephalalgia, and a few days afterwards her confinement took place. She lost a considerable quantity of blood at this period; owing to which, in addition to repeated venesection from the time of her first attack, together with leeching and reiterated blistering, her condition had become highly anæmial and debilitated.

*July 21.* Ptosis was complete on the left side, though the upper lid could be just separated from the lower by wrinkling the forehead, *i.e.* by bringing into action the occipito-frontal muscle. On raising the palpebra with the finger, the globe was seen abducted, its axis making an angle of between  $20^{\circ}$  and  $30^{\circ}$  with the natural line of direction in regarding an object straight forwards: it could not be brought nearer that line, however much the other eye were abducted; but was capable of increased abduction when the opposite organ was strongly adducted: and on this effort being discontinued it gradually returned to its former position. The motions of elevation and depression were abolished; the axis of the left eyeball remaining horizontal, to whatever degree the right were directed upwards or downwards. The pupil of the affected eye was widely dilated, having a diameter more than double that of the right pupil; and exposure to strong light produced no change in it: the sight, however, of the left eye was good, with the exception that small and near objects were somewhat imperfectly distinguished; a defect for which the extreme dilatation of the pupil was sufficient to account. The right eye and its appendages were perfectly healthy; but double vision of course was produced, when both eyes were simultaneously employed upon any object not situate toward the left hand of the patient. The sensation of the conjunctiva, and of the skin surrounding the orbit, was perfect.

#### CASE 5.

HENRY H—, aged 26, was a fishmonger, subject to occasional bilious derangement, and, in hot weather, to pain across the forehead, for the relief of which he had habitually employed leeches with benefit. He was, six weeks before application at Guy's, suddenly seized, immediately after a walk of six miles, with severe pain in the head, tinnitus, vertigo, and sickness. He had not partaken of any thing likely to disorder the stomach. The sickness, however,



accompanied with the other cerebral symptoms just mentioned, and with loss of power of elevating the upper lid on the right side (which took place suddenly on the first onset of these symptoms), continued for three or four days. He was twice cupped, was blistered at the nape of the neck, and had purgative medicine administered; and, under these remedies, the sickness subsided, and the power of the levator palpebræ was in some degree restored. On application at the hospital, November 10, 1845, he still complained of headache and vertigo; the right upper eyelid could only be raised so far as to uncover about a third of the pupil, unless the occipito-frontalis were called into action; the movements of elevation, depression, and adduction of the globe were limited much within their normal extent; and the globe, when quiescent, maintained the position of abduction. There was diplopia in regarding any object to the left of the median line; and the right pupil, which the patient spontaneously described to have been at first much larger than the left, was still a trifle more dilated and sluggish than the latter, which was of medium size, and active. I prescribed him a compound calomel pill, and two grains of sulphate of zinc with the compound infusion of roses and salts, three times daily, and a blister to the back of the neck.

*Nov. 21.* Though convalescing, the patient still complained of occasional vertigo and headache in the morning: he could raise the right nearly as well as the left superior palpebra; the motions of the globe were almost perfectly restored; horizontal diplopia had ceased; there yet remained a trifling increase in size and indolence in action of the pupil. A grain of quinine was added to each dose of his mixture; two of the daily pills having been previously discontinued.

28. He was nearly well. A just perceptible difference existed between the degree of elevation of the two superior palpebræ: the power of adducting the right globe was perfect; that of elevating and depressing it still restricted within less than the natural boundaries: hence, double vision, which had ceased a week before in the horizontal direction, was still manifested at the extremes of the perpendicular movements of the eyes. Some indolence was the only remaining morbid affection of the pupils.

#### CASE 6.

JOHN C—, aged 28, a gas-work labourer, usually in the enjoyment of excellent health; who had abstained from indulgence in liquor, and been exempt from exposure to the furnace for some time

before his application at the hoſpital, September 29, 1845; was attacked about two months previously with cephalalgia, vertigo, and double viſion, which were not preceded by any irregularity in diet, and ſubſided without treatment in a couple of days. For eight or nine days before he applied at Guy's he ſuffered from ſevere pain at the occiput, extending along the right ſide of the head, occurring chiefly in the night, and on his riſing from bed in the morning, and laſting for two or three hours at a time. This was followed by vertigo and diplopia, and, ſhortly after, by gradual dropping of the right upper eyelid.

When he came for advice he was free from pain, and unconſcious of any other ailment than complete inability to raiſe the lid, though he could ſlightly ſeparate it from the inferior palpebra by wrinkling the forehead by the occipito-frontal muſcle. The poſition of the globe, when at reſt, was with the cornea directed ſtraight forwards. The patient could abduct the globe freely, and adduct it too, as far as the centre: he could alſo elevate and depress the globe; but within very narrow limits only; whence objects held at all to the left ſide of the median line, or much above or below the level of the eye, were perceived as double. The pupil of the right eye was of thrice the diameter of the left, but acted conjointly with it; and alſo, to a ſlight extent, independently: the left eye was unaffected, and no other paralysis exiſted. I ordered cupping to ten ounces, and a purgative at once; two grains of calomel with one of opium, three times daily; chalk mixture if neceſſary; and the ſtronger mercurial ointment for inunction on the temple.

Under this treatment he rapidly improved. At the expiration of a week he could raiſe the lid, ſo as to expoſe three-fourths of the pupil; he could adduct the cornea conſiderably paſt the central point, and raiſe and depress it more extenſively; double viſion of objects on the left continued; and the pupil was equally dilated, but perhaps more active: the mouth was becoming ſore. In another week the motions of the lid and eye were almoſt entirely recovered; the pupil was reduced to two-thirds of its late habitual ſize, and had regained its briskneſs of movement; and the patient ſhortly after diſcontinued his attendance at the infirmary.

#### CASE 7.

THOMAS G—, aged 28, a healthy railway excavator, not ſubject to headache or other complaint, occaſionally indulging in liquor, but not a habitual drunkard, in the laſt week of April 1846 was

immersed up to the knees in the river, and was, on the succeeding day, seized with severe pain over the left eyebrow, preventing sleep, and accompanied with tinnitus, vertigo, and vomiting. He was not aware of any dietetic irregularity to account for these symptoms. The pain continued distressing for two or three days, when the eyelid of the same side drooped; and in three weeks time, *i.e.* three days before his application at the Eye Infirmary (May 22), ptosis became complete.

*May 22.* The patient was free from pain, except occasionally on assuming the recumbent posture: he was without giddiness or sickness; but suffered in a slight degree from tinnitus. His appetite was good; bowels open; pulse regular and compressible. The left superior palpebra was completely closed, and was but barely separated from the lower lid by elevating the eyebrow: the globe, when quiescent, was a little abducted, and admitted of free abduction; but could not be adducted sufficiently to bring the cornea to the central position: the movements of elevation and depression were almost totally abolished, the attempt to effect the former action producing a peculiar rotation of the globe on its longitudinal axis, for perhaps  $15^{\circ}$  or  $20^{\circ}$ : the pupil was dilated to about twice the ordinary diameter of that of the right side, and free from adhesion: it rather dilated than contracted on exposure separately or conjointly: the right pupil was active, though adherent by one or two bands to the capsule. Vision with the affected eye, when the lid was raised by the finger, was pretty good: before the attack of paralysis it was perfect.

Calom. gr. i. Opii. gr.  $\frac{1}{2}$ . nocte et mane.

Pil. Coloc.  $\bar{c}$  Cal. gr. xv. statim.

Applic. Empl. Lyttæ nuchæ.

29. He still had tinnitus on assuming the recumbent posture; but in other respects felt quite well. The power over the lid was much increased, so that a considerable portion of the pupil was displayed. The cornea could be adducted to the nasal side of the centre: elevation and depression were performed but little better. The rotation of the globe on its axis continued, upon the effort to elevate it being made; and, on attempting to close the affected lid when held open, the cornea was turned upwards and outwards, the other cornea being turned upwards and inwards at the same motion. The pupil was equally dilated as before, and rather expanded than contracted on exposure.

Applic. Empl. Lyttæ pone aurem.



*June 1.* The mouth was ſore, and the patient better. The motions of the globe and lid were much improved: he could expoſe nearly half the pupil. The pupil contracted in aſſociation with its fellow, but was ſtill morbidly dilated.

Rep. Pil. omni nocte.—Applic. Empl. Lyttæ temp.

#### CASE 8.

HARRIET C——, aged 36, applied at the Eye Infirmary April 10, 1846. Since the loſs of her huſband, fifteen months previously, ſhe had experienced extreme privation; and had ſuffered much pain in the head, with giddineſs, ſomnolency, impairment of memory, loſs of appetite, and ſickneſs. Theſe ſymptoms, about three months before her application, reſulted in temporary loſs of ſpeech and motion, without the extinction of ſenſibility, and without convulſion: the ſeizure, from which ſhe recovered in the courſe of half an hour, was probably of the nature of ſyncope. She roſe in the morning, about a month afterwards, as well as uſual; but in the courſe of the day ſuddenly loſt the power of elevating the left upper eyelid.

When ſhe preſented herſelf at the hoſpital the left ſuperior palpebra was completely depressed, and could not be raiſed, except that a narrow ſtripe of ſclerotic and cornea was uncovered by the exertion of the occipito-frontalis. Upon lifting up the eyelid by the finger the globe was ſeen reſting permanently abducted: it could be adducted, upon abducting the oppoſite eye, for perhaps 30° from its habitual poſition, (the effect, probably, of elasticity of the circumjacent ſtructures, upon the relaxation of the rectus externus), but could not be brought to the centre: there was not the leaſt power of elevating or depressing the globe, which undeviatingly maintained a horizontal poſition. Since the occurrence of ptoſis the affected eye had become conſiderably protruded, and its viſion very imperfect. The left pupil was circular, and of much larger area than the right. The latter was active; the former all but fixed, oſcillating in the ſlighteſt perceptible degree, and not contracting, upon the admiſſion of light.

Coloc. c̄ Cal. gr. x. pro re natâ.

Quin. diſulph. gr. iſs. ex Inf. Roſæ Co. ter die.

Pil. Hydrarg. Chl. Co. gr. v. nocte. mane.

Applic. Empl. Lyttæ nuchæ.

*April 17.* The globe was much leſs prominent, the power of adduction perhaps ſlightly improved; not ſo, that of elevation or

depression, or of elevation of the lid. The pupil remained in the same condition.

*April 24.* The power of raising the lid was in some degree restored, and the globe could be adducted past the central position, but could not be raised or depressed. The pupil was still disobedient, and larger than that of the opposite eye. The general health was improved: the headache and giddiness had not completely subsided.

Prolapse of the globe, as in the above case, is easily explained; but is not of so frequent occurrence as might be anticipated.

#### CASE 9.

SARAH S——, aged 20, a somewhat stout and short-necked girl, servant of all-work, who had indulged in an over-plentiful diet, (partaking of meat thrice daily,) and was subject to a very constipated condition of the bowels, was admitted May 13, 1846, with ptosis on the right side. She then stated, that for a month she had suffered from headache and giddiness, while sitting at needlework; and five days before admission was suddenly seized with pain in the head over the right eyebrow, accompanied by faintness and vomiting. She went to bed, and had leeches applied with relief; but the next morning found the right upper lid drooping, and vision on the same side impaired. She had since been bled, leeches, and purged; notwithstanding which, the fall of the lid and impairment of vision had both increased.

*May 13.* The symptoms were as follows:—The right superior palpebra was dropped to such an extent as still to cover half the cornea, when raised as much as practicable without wrinkling the forehead: the movements of adduction, elevation, and depression of the right globe, were more limited than natural: that of abduction was perfect. The right pupil was about thrice the diameter of the left; but separately and conjointly, contractile, though to a slight extent only. Vision on the affected side was considerably impaired, so that the patient read the large letters over her bed imperfectly; and the light was somewhat painful to the same eye. Diplopia arose on regarding an object at more than a short distance to the left of the median line: the left eye was unaffected. She was free from pain and giddiness; and, except for the condition now described, felt quite well: the bowels were stated to be

open, and the menſtruation regular: the pulse was ſteady, but rather feeble.

Pil. Coloc.  $\bar{c}$  Cal. gr. x. ſtatim.

Quinæ diſulph. gr. i. ex Inf. Roſæ Co. ter die.

Pil. Hydrarg. Chl. Co. gr. v. nocte maneque.

May 15. She was not ſo well: ptoſis had become complete; and the three motions of the globe, and that of the pupil, more reſtricted. She had commenced menſtruating. The quinine, of which ſhe had taken five or ſix doſes, was withdrawn.

Omittatur Miſt.—Capiat Hydrarg. Chl. gr. i. Opii. gr.  $\frac{1}{4}$ . ter die.

Applic. Empl. Lyttæ nuchæ.

18. The gums were becoming ſore. Some improvement in the movements of the lid and globe appeared to have taken place; but the right pupil was full thrice the diameter of the left.

20. Power over the lid and globe again diminished; the pupil, though widely dilated, exhibited a trace of contractile power on expoſure to light: diplopia had ſubſided.

On the evening of the 30th the patient retired for the night, complaining only of ſome headache, which it ſeemed ſhe had never been quite free from, while in the hoſpital; though, to me, ſhe had more than once denied having any. The bowels were freely open. She ſlept comfortably until about five o'clock A.M. on the 31ſt, when the nurse's attention was attracted by her moaning. The patient was then found in a ſtate of inſenſibility, diſcharging froth at the noſe and mouth, with deep, low ſtertor, and without convulſion. Cupping to the neck and other meaſures failed to afford relief, and ſhe died at nine o'clock the ſame morning.

On examination of the body, with the exception of a few cys-  
ti-form growths in the ovary, of ſmall ſize, the viſcera of the cheſt and abdomen were found healthy. There was conſiderable recent extravasa-  
tion of blood at the baſe of the brain, penetrating extenſively in the meſhes of the pia mater between the convolutions. The hæmorrhage had taken place from the poſterior communicating artery of the carotid of the right ſide, through the parietes of which was an aperture, overlaid by a circumscribed clot (termed by ſome an aneurism) of about the ſize of a large pea. Under this the right nerve of the third pair was ſpread out, having obviously undergone a degree of compression, by this older effuſion, more than ſufficient to explain the arreſted functions of the nerve. Upon ſection, the tumor proved to be a ſolid clot. The preparation is now in the Muſeum, marked 1501<sup>52</sup>.

In the remaining caſes, ptoſis was accompanied by ſym-



ptoms indicating unequivocally the affection of other nerves besides the third: it in fact became insignificant amid the assemblage of more distressing ailments, with which the pitiable subject of the last history was visited.

#### CASE 10.

MARGARET S——, aged 40, a tall, sallow-complexioned, cachectic woman, was pretty well, up to a period of eight months before her application at Guy's (on Oct. 17, 1845); but was then attacked with partial hemiplegia of the left side, ushered in with tingling and numbness of the extremities, and various general symptoms, which yielded to the treatment adopted. Four months previously to presenting herself at the hospital, menstruation ceased; and three months prior to the same period, having had no premonitory symptoms, she found, on rising one morning, that her power of raising the right superior palpebra was completely lost; and this power had not since been re-established.

On becoming a patient at the Eye Infirmary, she was totally unable to elevate the right upper eyelid by its proper muscle: the right cornea was greatly abducted, and could not be brought to approach the central position; but, after further abduction, recovered its former one: elevation and depression of the globe were likewise abolished: vision was double: the pupil, though confined at the lower part by a tag of adhesion to the capsule of the lens, from inflammation twenty years before, was of more than twice the diameter of that of the healthy eye; and oscillated, just perceptibly, on the sudden admission of light. The sensation of the conjunctiva and neighbouring parts was perfect: the sight of the affected eye was somewhat impaired; though vision of large objects was as good as ever: the opposite eye was healthy.

This patient was put under the use of mercury, together with tonics, as sarsaparilla and ammonia; and electric sparks were drawn from around the globe; but no other benefit accrued than improvement of the general health, and subsidence (most likely spontaneous) of diplopia.

*Dec. 26.* No improvement having been effected in the local complaint, and none appearing probable, I removed, on Dec. 6th, a large fold of skin from the superior palpebra with a scalpel, and closed the wound with sutures. The larger portion of it healed by adhesion, leaving only a linear cicatrix; and the result of the operation was, to enable the patient to elevate the lid to the usual extent, by means of its newly-formed more close attachment to the

brow, (the occipito-frontal muscle, of course, being the agent of motion,) the lids continuing capable of perfect apposition when desired. Not abandoning the hope of yet further remedying the deformity, I subsequently divided the external rectus; but the globe, in the absence of an adducting force, still maintained the position of abduction, in which it had remained for five months, and to which the cellular and adipose tissues, and other structures within the orbit, had become adapted. It was my wish to have drawn the globe into position, and retained it there for a day or two, by means of a fine ligature passed through the ocular portion of the tendon after its division, according to the plan devised and successfully enacted by Mr. Wilde, of St. Mark's, Dublin; but the patient being averse to the procedure, it was not insisted upon. She quitted the hospital, however, well pleased with the improvement in her personal appearance which she had obtained by renewed power over the upper lid.

For the history of the following case I am indebted to Mr. George Roper, who kindly drew my attention to it when in the hospital.

#### CASE 11.

JOHN B——, aged 17, a temperate man, of good general health, fell from a height of forty feet upon the deck of the ship to which he belonged, on May the 11th, 1846, his head striking the edge of the long boat at the same time that the body reached the surface of the deck. He bled profusely from the ears, nose, and mouth; was taken up perfectly insensible; and remained in that state, passing his evacuations involuntarily, for seven days. There being no surgeon on board, the patient was blistered at the nape of the neck, and submitted to cathartic medicine by the Captain; and after the first week he gradually amended, but still exhibited remarkable drowsiness and somnolency, together with inability to raise the upper lid of the right eye. On the seventeenth day, upon the arrival of the ship in London, the man was admitted into Guy's Hospital.

He was then sensible, but in a dull and torpid condition, and of course oblivious of the circumstances of his accident. His appetite was good; the bowels were costive; and the pulse, which when unexcited numbered but 48, would rise, upon any exertion or disturbance, to 100 beats in the minute. The urine was retained, and passed healthily: the general surface, as well as that of the conjunctiva, appeared pale and exsanguine. A cicatrix, about an inch long, was visible just above the right superciliary arch,

and marked the site of the wound occasioned by the fall: the right upper eyelid was dropped; the cornea abducted; and the power of adducting it lost. The same eye was perfectly amaurotic: both pupils were widely dilated; but the left was contractile, the right motionless.

He was put upon middle diet, and ordered—

Coloc.  $\bar{c}$ . Cal. gr. xv. statim.

Hydrarg.  $\bar{c}$ . Cret. gr. iiij. omni nocte.

Jul. Rhei. Co. ter die.

Empl. Lyttæ nuchæ applic.

*June 2.* He had improved, yet still experienced occasional throbbing in the head, accompanied with giddiness on attempting to walk, and a peculiar sensation of tremor on assuming the recumbent posture: the right superior palpebra could be raised better: amaurosis, and the state of the pupils, were the same.

Applic. Empl. Lyttæ nuchæ.

On June 17, when I visited this patient, he complained of shooting pain, confined for the most part to the right side of the forehead and the neighbourhood of the orbit. He was troubled with giddiness, and tinnitus in the left ear; in which, also, he was almost completely deaf, and seemed to have been so ever since the accident, though the symptom had not been noticed for longer than a fortnight. He was slow in his answers, and appeared to labour under some oppression of intellect. The bowels were open; and the pulse excitable and feeble. The right eye was incapable of distinguishing day from night: the cornea could be adducted to the nasal side of the central position; but in this movement, as well as in those of elevation and depression, the right eye was restricted much within the limits enjoyed by the left. The right pupil was constantly larger than the left, by about one half the diameter of the latter; it contracted, to a certain extent, in unison with its fellow, being motionless when the left eye was covered.

*July 20.* The patient was discharged. He had almost perfectly recovered the voluntary motor power over the globe; yet was deaf and amaurotic, as on the last report.

#### CASE 12.

SILAS H——, aged 53, was admitted into Guy's Hospital, under Mr. Hilton, November 21, 1845. He was by occupation a farmer;



and, with the exception of occasional asthma, had generally enjoyed good health. He had never had any fit, nor suffered from headache, vertigo, or other cerebral symptoms. Three years before the above date he had a cancerous sore removed from the nether lip, since which time the lip had been numb. The affection for which he was sent to the hospital commenced about eighteen months before his application there, as a growth attached to the gum of the lower jaw on the left side: it was unaccompanied by inflammation, but it increased in extent, until, six months after its discovery, the jaw became fixed; though at that time there was not observed any prolongation of the tumor backwards, which might have interfered mechanically with the motions of the maxilla. At, or shortly after this period, he began to experience very severe stabbing or shooting pains at the left side of the face and temple, which were deemed *tic douloureux*, and seven teeth were drawn from the lower jaw for its removal: these were all sound, and no pain was felt in their extraction. The original shooting pains, however, continued for three months; and though then, for the most part, succeeded by numbness, were of occasional recurrence up to the time of the patient's admission; some five months previously to which the sensation of the left side of the face was entirely lost, and the mouth became drawn to the opposite side. The patient had from infancy imperfect vision with the left eye: about nine months, however, before his application at the hospital it became unusually subject to inflammation; which, in the course of two months, reached such severity as to destroy the sight. The sensation of this globe was lost simultaneously with that of the left side of the face: its loss of motion the patient had not discovered on his admission.

*Nov. 21.* A hard nodular tumor, involving the lip in front, and having its main attachment, though not a very firm one, to the anterior face of the lower jaw, extended from the symphysis to the angle of that bone on the left side. The horizontal ramus itself seemed enlarged, especially on its inner face; and upon the inner surface of the angle, and behind the ascending ramus, there was considerable (apparently bony) indurated enlargement, as it should seem, proceeding from the lower jaw: difficulty, however, existed in making a satisfactory examination, as the incisors could be unclosed only about half an inch. A discharge of somewhat purulent character escaped from one spot on the inner side of the inferior maxilla. The left temporal and masseter muscles were paralytic: there was anæsthesia of the left side of the head and face, and of the mucous membrane lining the left cheek: ordinary

sensation was likewise lost in the left nostril completely; but snuff placed within it was perceived, though very slightly, by its scent: the left side of the tongue (the most anterior portion of which only could be protruded, and was protruded straight), tested with salt, was found destitute of taste; and the morbidly vascular conjunctiva of the left eye was devoid of sensation. All motions of the left cheek being lost, the mouth was drawn to the right side: the left supercilium could not be raised, nor the eyelids contracted. The left superior palpebra was dropped merely by its own weight, and could not be elevated: the globe could be just perceptibly elevated and depressed, in accordance with the motions of the opposite eye; but could not be adducted or abducted in the slightest degree: it consequently remained fixed and central. The cornea had been destroyed by ulceration or gangrene; and a semi-opaque cicatrix, discoloured from the adhesion of the iris to its inner surface, supplied its place. Not the least perception of light remained. The tumor was considered by Mr. Hilton to be malignant; and the paralysis produced by growth at the base of the skull.

No hopes of cure being held out, the patient quitted the hospital; and no account of him has been received since.

It is not my purpose to enter at any length into the general history of ptosis. As of similar manifestations of disease, the essential condition of this is a suspension, or interruption of, the function of the proper nerve. Of such interruption, the immediate cause may be one of many: they are, however, reducible into two classes;—first, those which act by creating pressure upon the nerve *ab extra*, including tumors, effusions, extravasations, displacements of bone, &c.; secondly, those which depend upon original affection or disintegration of the nervous structure, as by inherent disease, concussion, or division. In relation to our present subject, the former class of causes is in far the more extensive operation, and seems to have been exclusively influential in the foregoing cases. For the most part, they present (with the exception of the two last) histories of considerable cerebral disturbance, evinced by distressing headache, vertigo, tinnitus aurium, sickness, &c., previous to the paralytic seizure. There can therefore be little doubt that the direct agent in producing the paralysis existed

within the cranium; and, in the absence of those still more strongly-marked symptoms, and more widely-diffused effects, to which meningeal or cerebral inflammation would have given rise; and in the absence of that steadily progressive character of the symptoms for which we look when a tumor is making its stealthy advances; we shall not probably be much in error in assuming, in the eight first, and in the tenth cases, what, in the ninth, was demonstrated—the occurrence of a sanguineous or serous effusion, or circumscribed vascular enlargement in the vicinity of the nerve of the third pair. The supposition of mere general cerebral congestion does not appear adequate to explain the cases: it would, and must be allowed to account for the premonitory cerebral symptoms; it cannot be supposed of at once so complete, and yet so partial operation, as to produce extinction of function, but only of one member of one pair of nerves.

It is interesting to inquire the reason of the peculiar liability of the motor oculi to paralysis, apart from other nerves of the orbit; for such cases as the nine first detailed, wherein this nerve was singly paralytic,\* are very frequent. This is evidenced by the number falling, within a comparatively brief period, under my individual observation; but my own experience upon this point is only corroborative of that of others; and it simply needs attention to be directed to the subject, to derive ample confirmation of the fact—that the third nerve is remarkably prone to paralytic affection—from a casual stroll through any crowded district: indeed, the diplopia of supervening inebriety is an exemplification of it. The third nerve here exhibits its aptitude (if I may use the expression) for paralysis, by being the first to discover impairment of function; whence, early in his intemperance, the individual, *qui studet calicibus epotandis*, perceives this apparent duplication of objects, the mere result of his inability to converge the optic axes properly upon them.

Ptosis is described to be often produced by a rheumatic affection (as paralysis of the facial nerve has followed long-continued exposure to currents of cold air); and there can be no doubt of the competency of such a cause to produce it:

\* The pathetic probably escaped in all, except Case 12.



yet the uniformity with which, as just noticed, the compliant was traceable, in the above cases, to intra-cranial disturbance, would seem to invalidate the probability of a rheumatic origin being common. Even to suppose, however, that paralytic ptosis is in general rheumatic in its nature, would not at all tend to the solution of the question,—why the motor oculi should so often be selected to suffer, and to suffer alone.

This circumstance must, I apprehend, of necessity be ascribed to some constant predisposing condition of the nerve (one existing, therefore, in the state of health), brought into action as an element of disturbance when a morbid tendency has arisen. If the fact be so; and if, in the majority of instances, the disease arise, not from a rheumatic or other locally acting impression from without; nor from derangement of any kind within the orbit,—for when the entire nerve is paralyzed we naturally look for a cause situate posterior to its distributive expansion, upon entering that cavity; nor from disturbance in the passage of the nerve through the lacerated foramen,—where, from its close apposition with the sixth and nasal branch of the fifth, we can hardly conceive a paralyzing influence from which the latter nerves should be exempt;—if such be the case, we are constrained to seek such predisposing condition, in other words, such anatomical arrangement, within the cavity of the cranium, where we have already seen reason to fix the efficient or immediately exciting cause of the malady.

Now, directed as we are, in this way, to the intra-cranial course of the motor oculi, for the probable source of its pre-eminent tendency to paralytic affection, it seems to me not difficult to assign, in this situation, a satisfactory explanation of the fact. We find the nerve, almost throughout this track, in the immediate vicinity of those which must be regarded as very dangerous allies: first, hooking round the posterior cerebral artery, to traverse the narrow interval between that vessel and the superior cerebellar; then running forward nearly parallel to the posterior communicating artery, in a degree of proximity, the occasional mischief of which is demonstrated by the necroscopic examination in Case 9; and then crossing the termination of the internal

carotid, immediately on its outer side, and closer to it than any other of the nerves contained within the cavernous sinus.

The sixth nerve, it is true, is previously in actual contact with the coats of this vessel; but running along the floor of the sinus, must, in a great degree, be secured from pressure; as, from the upward direction of the current of blood, the horizontal portion of the carotid must be rather raised from, than pressed against, the inferior wall of the sinus upon each contraction of the left ventricle; and, from the same cause, the inferior wall of the artery itself must be, mechanically, the least liable to morbid distention, or rupture. That nerve, however, sometimes suffers like the third, as in the subjoined case; in which it may, with considerable probability, be surmised, that the point of nearest approach to the carotid was the point where its integrity was destroyed. The partial character of the defect in vision would seem rather to indicate disorder of the retina than of the optic nerve.

#### CASE 13.

JAMES D—, aged 24, an excavator, and habitual drunkard, was admitted April 11, 1845. About a month previous to his application, after a fit of intoxication, the left eye first became affected with squint; and the double vision, which this produced, incapacitated him for continuing his labour. He was, at the same time, attacked with headache of considerable severity, vertigo, and tinnitus; all which symptoms occasionally recurred, up to the time of his admission. At this period, the motions of the right eye and lids were perfect, and the pupil was active; but vision misty, especially in respect of objects below the level of the eye. The left eye and lids likewise enjoyed their normal motions, with the exception of that of abduction; the globe constantly maintaining the position of adduction, from which it could not advance to the central position, whether the opposite organ were open or closed: the pupil was active, and corresponding in size with the right pupil, and the vision perfect. Diplopia had ceased after a week's persistence; and the patient was free from any other paralytic affection than that of the rectus oculi externus. He was ordered,

Coloc.  $\bar{c}$ . Cal. gr. x. statim.

Pil. Hydrarg. gr. v. Pil. Opii, gr.  $\frac{1}{4}$ . nocte maneq.

Empl. Lyttæ nuchæ appl.

The remaining pain in the head was soon removed; but after continuing in the hospital about a month he was discharged, without having regained in any degree the power of abducting the left eye.

The circumstances, above adverted to, respecting the relative anatomy of the nerves of the third pair will go far towards elucidating the cause of their remarkable proneness to paralysis; for it is evident how direct must be the deleterious influence upon their function of any temporary or permanent enlargement of, or effusion from, any portion of the arterial tubes, with which they are in so close proximity.

It may be objected to this view, that it is rather a general rule throughout the body, than a particular arrangement in the instance under examination, for nerves to accompany blood-vessels: but a thought upon the peculiar condition of the parts contained within the unyielding bony parietes of the skull will suffice at once to deprive the objection of force. No one of these can, by morbid growth, or extravasation from its walls, assume the occupation of a space, in the most trifling degree, larger than is healthily its due, but by more or less detrimental encroachment upon some neighbour; which, owing to the unaccommodating nature of the cranial parietes, cannot, as in other situations, slip aside, and thus elude the injury. Of course, when such an enlargement or extravasation occurs, the part nearest at hand will, *cæteris paribus*, suffer the earliest and the most severely; and hence, I believe, it is, that we so often find the power of the motor oculi impaired, or entirely destroyed, without any other nerve apparently partaking in the derangement, or, at least, partaking in equal degree.

The disease seems to have been pretty equally apportioned, in the first nine of my cases, between subjects of debility and repletion. The two patients, whose cases are first in the list, are especially described as belonging to the former class: the fourth bore evident marks of the same general condition when she came under my care; but between that period, and the primary onset of the disease, she had undergone repeated venesection, and had lost a considerable quantity of blood at her delivery; so that we may perhaps fairly conclude



her original state to have been one of gravid plethora. The third, fifth, sixth, and seventh patients exhibited amelioration or cure under an antiphlogistic system; and might therefore, though not characterized by any prominent personal indications of plethora, be set down as subjects of that state, rather than of anæmia: and the ninth gave a history conducting to the same conclusion. Case 10, on the other hand, was that of a feeble cachectic individual: and the eighth case exhibited a similar morbid condition of constitution, only in more aggravated form.

The course of treatment pursued demands but little observation, as the general principles upon which it was conducted are commonly recognised. One only remark I would venture; it is, that considerable reserve in the use of direct depletion is commonly most in accordance with the principles of sound practice. The two patients, in whom venesection was adopted before their application at the hospital (Cases 4 and 9), experienced very questionable benefit from it; while the milder measure of cupping, followed up by the use of mercury proportioned to the powers of the patient, evacuation of the bowels, restricted diet, blistering, &c., and subsequently a guarded resort to tonic medicine, were productive of very decided advantage. The subject of Case 9 underwent no relief of the paralytic symptoms, under the active antiphlogistic treatment at first instituted: in fact, these symptoms had become progressively worse. The cautious use of quinine, which this fact and the feeble pulse of the patient sanctioned, was not attended with a more favourable effect; and though, upon withdrawal of this medicine (after five or six grains had been taken), and more active resort to mercury and counter irritation, a little benefit was for a time apparent; yet the patient eventually became the subject of an attack of apoplexy, which was proved, upon necroscopic examination, to have resulted from an inevitably fatal source.

A few words may be bestowed upon the operative measures adopted in Case 10. The idea of subjecting an eyelid, abandoned by its proper levator muscle, to the influence of the occipito-frontalis (which is capable of being converted into a substitute of no despicable efficiency), was, I believe, first

suggested and put into practice by Mr. Hunt of Manchester; and the operation has been subsequently advocated and repeated by Mr. Curling. In the present instance (the only case in which I have employed it), it certainly proved serviceable. The improvement in the patient's personal appearance was great, and highly gratifying to herself; for she had regained the power of keeping the eye open, and thereby become relieved of the disagreeable semi-cadaveric aspect previously borne. Had the division of the external straight muscle rectified the position of the globe, the result would have been still more satisfactory; but that it was not followed by this effect, after a five months' maintenance of the state of abduction, and in the absence of any adductive power, was no matter of surprise. The patient, for three months prior to her application at the Eye Infirmary, had laboured under complete paralysis of the muscles supplied by the motor oculi; a seven weeks' trial of medicinal resources was not too long a preliminary to the operations; and it was expedient to ensure the success of that intended for the cure of ptosis, before having recourse to the less promising one, the possibility of advantage from which was altogether contingent upon the success of the former. I think the operation for ptosis,—which essentially consists in supplying the deficiency of one paralytic muscle, by adapting another, deriving nervous influence through a different and unobstructed channel, to its office,—most scientific and ingenious in conception: in execution it is easy; and in cases, where personal appearance is an object—medicinal resources, patiently tried, have failed—and there seems no reason to apprehend any further cerebral disturbance, its careful performance is decidedly indicated. The performance of the operation, trifling as it may appear, must be careful; for if the portion of skin to be removed is not first very accurately calculated, by nipping it up with a pair of entropion forceps, and then testing the ability of the patient to close the lids completely, as well as open them, the very obvious danger is incurred of cutting away too much integument, and creating, in consequence, a strictness of adhesion between the brow and superior palpebra, which will prevent the apposition of the lids in sleep, and establish a liability to

all the deplorable consequences of obstinate chronic conjunctivitis.

The two last cases differ considerably from the others, both in their nature and the extent of the disease. Case 11 presented an example of nearly perfect paralysis of the right optic and motor-oculi nerves, and less complete paralysis of the left auditory, resulting from injury at the base of the brain, produced by a fall, and for some time attended with insensibility and loss of power over the rectum and bladder; and it of course comes under the ordinary category comprehended in the general appellation of compression of the brain. The position, in which the body met the ground, was not such as to lead to a belief of fracture of the base of the skull, or laceration of the corresponding part of the encephalon. The more permanent symptoms were therefore, with the greatest probability, attributable to sanguineous effusion, from rupture of a vessel at the base; a conclusion countenanced by the gradual convalescence, which took place under the use of mercury and counter irritation.

Case 12, again, was distinct from all the preceding cases, and appeared to me to afford good grounds for inferring the disease to be entirely external to the skull. Besides others, all the nerves of the orbit were paralyzed; but without the antecedence or accompaniment of any headache, giddiness, tinnitus, sickness, somnolency, or other symptoms indicating affection of the cerebral mass. Now, it is impossible to conceive a morbid growth (for the history clearly indicates such to have been the source of palsy) steadily advancing within the cavity of the cranium, so as, at last, to abolish the function of numerous nerves, without giving rise to one symptom referrible to disturbed function of the brain itself. And, on the other hand, we have abundant evidence of external disease, of a kind warranting the supposition, that its extent and intricacy of connection were greater than could possibly be ascertained by examination in the living subject. The tumor, there could be little doubt, was malignant: it had perceptibly involved the ascending ramus of the jaw on the left side, and sprouted out from the same internally and posteriorly; and had, beyond question, ascended with it to the glenoid cavity, for the immobility of the jaw on the left side



was not simply paralytic, but also obstructive. Having thus reached the external base, its extension in different directions, so as to compress the nerves in the neighbourhood upon emerging from their respective foramina, can be readily understood. In this way, the facial and inferior maxillary nerves had suffered; while all the nerves of the orbit, and the second division of the fifth, had been intercepted, by the tumor insinuating itself through the speno-maxillary fissure. Such, at least, is the rationale, which seems to me most reconcileable with the facts of the case. The muscles of the eye were consequently powerless, a mere trace of activity being retained by the superior and inferior recti. The optic nerve was paralytic, as proved by total insensibility to the presence of light; which does not ensue upon mere opacity from slough of the cornea: and anæsthesia of the forehead, Schneiderian membrane, and conjunctiva, bore witness to the participation of the ophthalmic nerve in the mischief.\*

The conjunctival inflammation and destruction of the cornea, it may be suspected, arose from this latter paralysis. It is stated in the history, that the sensation of the globe was lost simultaneously with that of the left side of the face; which is described to have been impaired four months before its complete abolition, and nine before the date of admission. The patient, however, was positive as to the fact of the sensation of the globe having been retained until that of the face was finally lost; which consequently reduces the supervention of paralysis of the ophthalmic nerve to a period four months subsequent to that of the conjunctiva assuming a remarkable proneness to inflammation, and two months at least subsequent to the ultimate destruction of vision. Yet it might well be, that a patient, so little observant as not to be aware of the immobility of the eye until noticed to him in the hospital; and whose attention must naturally have been chiefly directed to the state of the face and locked jaw, until the destruction of the eye became imminent; may really have been deprived more or less completely of the feeling of the organ, some time before accident may have made him

\* I regret that I did not make any note respecting the secretion of the lacrymal gland.

aware of the circumstance. Thus I have known a patient ignorant of his loss of an eye, which, from the extent and stage of the organic change, must for months at least have been blind, until a casual interference with the function of the remaining organ has revealed his misfortune.

The ordinary phenomena attending paralysis of the motor oculi were, in this case, much modified. The usual abduction of globe was absent, for the abducting muscle shared the fate of its antagonist: and the term "ptosis" was more than commonly applicable to the state of the lid, which, when raised with the finger, fell again simply by its own weight; the fibres of the orbicularis being inactive, as those of the levator palpebræ. No relief to this symptom was attainable, as repeatedly observed to have been in the foregoing cases, from the energies of the occipito-frontalis muscle; and the anterior part of the globe being spoiled, the case did not present the phenomena, with regard to the iris, habitually found in cases of ptosis, and to which I have, in conclusion, to call attention.

There are, essentially, two states in which the pupil may be found in cases of ptosis: the more rare was met with in the first example, and may be despatched with very few words of comment. That case is remarkable, as affording a specimen of paralysis confined to the upper division of the nerve of the third pair—the division which is expended in the supply of the levator palpebræ and rectus superior muscles, and is unconnected with the lenticular ganglion and the ciliary nerves. In such a case, that the pupil should exhibit its normal activity, and be quite unaffected, is precisely what we should, *à priori*, be led to anticipate: this was the fact in the present instance; and is so, no doubt, in all cases of a like nature.

The second, or usual condition of pupil with ptosis (and uniformly present in the preceding series, except in Case 1, just noticed, and Case 12, wherein the iris and cornea were involved in common disorganization) is one of impaired contractility. The impairment, however, has a wide range of degree; and, in order to be correctly estimated as an effect of paralysis of the third nerve, it must not be considered apart from the state of vision; since an insensible condition

of retina would of course, of itself, give rise to the symptom. On referring back, then, to the cases, it will be seen that, for the most part, vision was but slightly impaired (too slightly to account for the pupillar dilatation); in some instances not impaired at all: while restriction or extinction of the contractility of the pupil was invariably combined with the other evidences of paralysis of the motor oculi. Moreover, even had amaurosis of the affected eye been the source of dilatation, the pupil should still have been obedient to the impression of light received upon the sound one, as in Case 11. Here the increased amount of dilatation produced by the perfect amaurosis might be estimated from comparison of the state of the pupil, when the sound eye was closed, with its condition when the latter was opened; and the dilatation resulting from the paralysis of the third might be valued at the difference between the two pupils, when both eyes were exposed.

It must not be forgotten, however, that as, on the one hand, deteriorated sensibility of the retina will cause dilatation of pupil; so, on the other, any considerable morbid dilatation of pupil creates an indistinctness of the images (especially of near objects), which is apt to be confounded with genuine amaurotic disturbance. The two cases, as above intimated, admit of discrimination, by considering the relation subsisting between the extent of pupillar dilatation, and the degree of visual disorder; the latter being great in proportion to the former in amaurosis, and little in mere paralyzed pupil: the influence of the other eye, if sound; which in amaurosis controuls the disposition to dilatation, but in paralyzed pupil cannot: the accompanying symptoms and history, &c.

By the application of these tests to the preceding cases, though perfect amaurosis unquestionably existed in one; and some slight affection of the optic nerve might be suspected in one or two others; and hence the dilatation of pupil may have been increased; yet there could be no doubt of this symptom being the regular consequence of paralysis of the third nerve in all. In the second case, indeed, it was but little conspicuous, and the activity of the iris, up to a certain point, was preserved; but it is to be noticed, that the lower division of the nerve altogether, seems to have suffered less



than the upper\*: and it is a curious circumstance, that, in several cases, where the morbid expansion of pupil was very marked, the pupil was active in effecting the extent of contraction still practicable;—another point of difference from amaurotic dilatation.

This case, then, cannot be adduced in contravention of the pathological fact established by the others,—that loss of power of the motor-oculi nerve ensures, as certainly, a direct loss of the healthy contractility of the pupil, as it does of that of three recti, of the levator palpebræ, and of the inferior oblique muscles.

This is a fact, indeed, which has been abundantly demonstrated by the experiments of physiologists; but it has not, I believe, received the confirmation of a detailed series of cases before. That now presented, while giving pathological testimony to the controlling power of the third nerve over the pupil, shews, at the same time, that this power is exercised only, as anatomy would indicate, by the inferior division of the nerve. With respect to the mechanism of the pupillary actions—amid the conflicting results of microscopical examinations, which, on this subject, just cancel one another—we are still fain to resort to rational arguments; and, among them, this obedience of the pupils to the third pair does appear to me to constitute one of the most forcible in favour of the muscular theory.

\* Ptosis was complete, and the motion of elevation was more defective than that of adduction: so, it is stated, was that of depression; but the latter movement is apt to be the least closely scrutinized.

# REPORT OF THE CLINICAL SOCIETY,

FROM JANUARY 1845 TO MARCH 1846.

BY EDWARD BENTLEY, M.D., AND ALFRED POLAND.

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## SURGICAL DIVISION, BY ALFRED POLAND.

THE Surgical division of the present Report comprises a period of fifteen months, and contains an analysis of 1683 cases. But, on the present occasion, it has been deemed advisable to subdivide this into two separate parts; since, from the commencement of October 1845, the organization of the Society has been much extended, and the cases reported have been more numerous. The nature of the process above alluded to has been rather an extension than a change of principle, and has resulted from the increased encouragement which the Authorities have afforded to the students of Clinical Medicine and Surgery.

Part I. contains the abstract of the cases reported by the Society from January to September 1845, and comprises 645 cases.

Part II. includes a return of every case, whether terminating in the discharge or death of the patients, from October 1845 to March 1846, and contains in these six months 1038 cases.

The Report generally is somewhat enlarged, and special note made of every case; thus tending to give an increased interest and value to it as a whole. Some of the divisions, perhaps, are too cursorily noted; while others, again, may be considered too prolix; but it is hoped that the present attempt may not be without its practical results.

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## PART I.

FROM JANUARY TO SEPTEMBER 1845.

THE first part of the Surgical Report is arranged and analyzed in a manner similar to that published in the last Volume.

*Surgical Report of Clinical Society from Jan. to Sept. 1845. 65*

SUB-DIVISIONS.	Cured.			Relieved.			Unrelieved.			Not Noticed.			Dead.			Total.		GENERAL TOTAL.	Per Centage.
	M.	F.	Per Cent.	M.	F.	Per Cent.	M.	F.	Per Cent.	M.	F.	Per Cent.	M.	F.	Per Cent.	M.	F.		
Injuries and Diseases of																			
A. Brain and Nervous System .....	15	..	75.	1	..	5.	1	..	5.	..	..	..	3	..	15.	20	..	20	3.100
B. Lungs and Appendages .....	3	..	60.	..	..	..	..	..	..	..	..	..	2	..	40.	5	..	5	0.775
C. Organs of Circulation .....	1	2	50.	..	..	..	..	..	..	..	..	..	3	..	50.	4	2	6	0.945
D. Organs of Digestion .....	21	8	69.04	1	3	9.52	1	2	7.14	..	..	..	4	2	14.28	27	15	42	6.615
E. Integuments .....	91	44	82.31	8	6	8.53	..	..	..	..	1	.60	8	6	8.53	107	57	164	25.426
E1. Tumors .....	3	6	56.25	..	..	..	3	2	31.25	..	..	..	1	1	12.5	7	9	16	2.480
F. Lymphatics .....	5	2	87.5	1	..	12.5	..	..	..	..	..	..	..	..	..	6	2	8	1.240
G. Urino-Genital .....	107	30	73.65	24	3	14.51	10	4	7.52	..	..	..	8	..	4.30	149	37	186	28.837
H. Joints .....	28	19	69.11	3	8	16.17	3	5	11.76	..	..	..	2	..	2.94	36	32	68	10.542
H1. Bone .....	80	6	73.50	5	5	8.54	4	1	4.27	1	..	.85	14	1	12.82	104	13	117	18.139
I. Eye and Appendages .....	3	7	83.33	1	1	16.66	..	..	..	..	..	..	..	..	..	4	8	12	1.890
K. Poisons .....	..	1	100.	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0.155
Total Results of Males and Females ..	357	125	..	44	26	..	22	14	..	1	1	..	45	10	..	469	176	645	
Total Results .....	482			70			36			2			55			645			
Per Centage .....	74.728			10.852			5.581			0.310			8.527			99.998			



## (A) INJURIES AND DISEASES OF THE BRAIN AND NERVOUS SYSTEM.

SUB-DIVISIONS.	Cured.		Relieved.		Un-relieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Concussion of Brain .....	9	..	..	..	..	..	..	..	..	..	9	..	9
Concussion of Spine .....	3	..	..	..	..	..	..	..	..	..	3	..	3
Cephalalgia .....	..	..	1	..	..	..	..	..	..	..	1	..	1
Sciatica .....	..	..	..	..	1	..	..	..	..	..	1	..	1
Delirium Tremens .....	1	..	..	..	..	..	..	..	1	..	2	..	2
Tetanus .....	..	..	..	..	..	..	..	..	2	..	2	..	2
Compound Fracture of Skull	2	..	..	..	..	..	..	..	..	..	2	..	2
Total Results .....	15	..	1	..	1	..	..	..	3	..	20	..	20
Per Centage .....	75.		5.		5.		..		15.		100		

Six of the cases of concussion were slight, and remained in the hospital only a few days: in one, however, the patient was the subject of epileptic attacks, and the concussion was the result of a fall during one of them. The two other cases of concussion were of great interest. In the first, the brain did not resume its proper functions until after a very protracted period: in the second, the patient was admitted five weeks after the injury, labouring under pains in the head, dimness of vision, and giddiness: he had several epileptic attacks, and slight paralysis of the right side: considerable epistaxis supervened at different times, and with temporary relief. He was treated by local depletion, blisters, seton, and calomel; and was presented cured at the end of three months.

Of the three cases of concussion of the spine, in the first, the blow was low down, and accompanied with only a temporary loss of sensation of the right lower extremity and right gluteal region; in the second, there was partial loss of motion of both legs; and in the third, temporary paralysis of the adductor muscles of the thigh. All were treated by local depletion and purgatives.

The case of cephalalgia was the result of a blow received four years previously, and was but temporarily relieved.

The case of sciatica occurred in a rheumatic subject, was very chronic, and was complicated with phthisis and ulcer on the great toe: it remained some time in the hospital, but was discharged at the end of three months unrelieved.

The two cases of delirium tremens were complications of severe injuries to the extremities: in both, the men were hard drinkers and of weak power. The first had a severe bruise of the foot, with subsequent sloughing of an extensive kind, and died completely exhausted, although wine, porter, ammonia, and nutritive diet were administered. The other had a very oblique fracture of the tibia and fibula; and the delirium was successfully combated by opium and porter.

Both of the cases of tetanus terminated fatally. In the first, the person was aged thirty-seven. The disease, on admission, was of two days' duration, and had supervened upon a crushed condition of the extremity of the fore-finger, produced eight days previously by a squeeze between two pieces of iron. He had trismus, opisthotonos, difficult deglutition, abhorrence of fluids, great pain; spasms every quarter of an hour, breathing thirty per minute; he was quite sensible. The finger was amputated; aconitine rubbed along the spine and about the region of the diaphragm; and large doses of fluid opium were given internally. No effect was produced, and he became gradually exhausted; the spasms lessened in frequency; and, after one or two short gasps, he died twenty-four hours and a half after admission. The autopsy displayed congestion of the vessels of the pia-mater, congestion of the brain, medulla oblongata, and spinal chord. In the amputated finger there was inflammation of both nerves to the extent of an inch upwards: one nerve was contused, the other nearly cut through. The second case was in a child. The disease was of five days' duration, and was consequent upon a compound fracture of the arm, which had occurred two days previously. The paroxysms were very severe, and continued with scarcely any intermission; and the child died in ten minutes, from suffocation. No autopsy was allowed; but the wound was examined, and inflammation of the median and ulnar nerves was observed.

The two cases of compound fracture of the cranium were

both discharged cured. The first was a boy, aged thirteen. There was considerable escape of cerebral matter; but the symptoms were slight; the pieces of bone were removed: and fungus cerebri ensued, with slight cerebral irritation. Liq. calcis, and a compress, were applied with marked good results: the nitrate of silver was then used for a few times, and the fungus entirely disappeared.

The other case was that of a labourer, aged thirty-nine, in whom there was also an extensively comminuted fracture of the skull, and the dura-mater was exposed, but not wounded. The pieces of bone were removed, and the man recovered without a bad symptom.

#### (B) INJURIES AND DISEASES OF THE LUNGS AND APPENDAGES.

Under this head but five cases occur, all males: three cured and two fatal. One of asphyxia, in a child only a few years old, who, after eating a piece of pudding, became suddenly choked, but unfortunately was not admitted until life had ceased: tracheotomy was, however, performed, and afterwards artificial respiration and galvanism had recourse to, but to no effect. One case of foreign body, a sixpence, in the trachea; no symptom was observed but an occasional spasmodic cough. Conjectures were raised as to its position, and even as to its presence. The stethoscope elicited a metallic sound: tracheotomy was urged by some, but considered inadvisable; and in the night, during a paroxysm of coughing, the man ejected the coin, and was soon presented in good health. One case of syphilitic laryngitis with aphonia, which was cured. Two cases of cut-throat: one superficial, above the os hyoides, and in which the result was cured. The other in a man aged fifty-seven; the wound was between the os hyoides and thyroid cartilage, and the larynx and pharynx were laid open: he was exceedingly depressed in spirits, and never rallied. He died on the third day.

#### (C) INJURIES AND DISEASES OF THE ARTERIES AND VEINS.

Two were cases of varicose veins: the one a female, aged twenty-five; and the other a male, aged fifty-three: both were cured by rest and bandage.



There were two cases of aneurism: one of the ulnar artery, following a wound by a piece of glass seven weeks before, which had, however, healed, but a small sac had formed: this was laid open, and both ends of the artery tied. Some sloughing took place, but the patient was quite cured at the end of a month. The other case was an aneurism of the femoral artery in the upper third, in a man aged fifty-one, and of bad health: the tumor had existed but four months, and was rapidly increasing in size: he had slight febrile disturbance, and required some depletion. The external iliac was tied; and the man went on well for a fortnight, when secondary hæmorrhage supervened, and afterwards recurred on several occasions, so that he became exhausted, his strength failed, and he died on the thirty-second day after the operation. The tumor had never diminished in size after the operation.

SECTIO CADAVERIS.—Incision sloughy: external iliac artery divided; the upper end plugged with coagulum; the lower end wide open, and devoid of clot. About three inches below the groin there was an aneurism about the size of an egg; and, surrounding this, a diffused aneurism, which spread between the muscles, &c., and extended from the iliac fossa over the anterior and inner part of the thigh, to within four to six inches of the patella: its lining sloughy, and the contents grumous, purulent, and foetid: peritoneum clear.

Two cases of phlebitis: one acute, the other chronic: both fatal.

The case of acute phlebitis occurred in a young man, aged twenty-five, of bad health and constitution, who had received a kick on the arm, to which leeches had been applied; phlebitis ensued, with severe constitutional symptoms; a livid appearance of the skin in the neighbourhood of the blow ensued; an incision was made, and a dead leech found embedded. No wound, except a leech bite, could be observed externally to account for its entrance. The man, however, died exhausted; and no autopsy was allowed.

The case of chronic phlebitis was in a person aged thirty-two, who had an abscess about the ankle, which was opened: œdema of the right leg supervened; and subsequently vomiting and impaired health. The limb was placed on an

inclined plane, and bandaged, and alteratives and quinine administered. The scrotum and prepuce became œdematous, as also the left leg; he had nausea and albuminous urine; his health gave way; petechiæ made their appearance; and he sank rapidly. On necroscopic examination, the vena cava inferior and right iliac vein were found obstructed by coagula adherent to the inner coat; the left iliac vein was contracted; the kidneys were granular; and the lungs were affected with old pneumonia.

## (D) INJURIES AND DISEASES OF THE DIGESTIVE ORGANS.

SUB-DIVISIONS.	Cured.		Relieved.		Unre- lieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Mouth and Throat :													
Inflammation & Ulceration	5	3	..	..	..	..	..	..	..	..	5	3	8
Parotid fistula.....	1	..	..	..	..	.	..	..	..	..	1	..	1
Harelip .....	1	..	..	..	..	..	..	..	..	..	1	..	1
Epulis .....	1	..	..	..	..	..	..	..	..	..	1	..	1
Cancer of tongue.....	..	..	..	..	1	..	..	..	..	..	1	..	1
Abdomen, &c.:													
Injury .....	2	..	..	..	..	..	..	..	1	..	3	..	3
Hernia .....	5	4	1	2	..	..	..	..	2	2	7	8	16
Obstructed intestine.....	..	..	..	..	..	..	..	..	1	..	1	..	1
Rectum, &c.:													
Hæmorrhoids.....	1	1	..	..	..	..	..	..	..	..	1	1	2
Fissure.....	..	..	..	..	..	1	..	..	..	..	..	1	1
Fistula.....	4	..	..	1	..	1	..	..	..	..	4	2	6
Abscess anus .....	1	..	..	..	..	..	..	..	..	..	1	..	1
Total Results of Males & Fem.	21	8	1	3	1	2	..	..	4	2	27	15	42
Total Results .....	29		4		3		..		6		42		
Per Centage .....	69·04		9·52		7·14		..		14·28		90·98		

Under inflammation and ulceration are arranged eight cases, all of which were cured. One of alveolar abscess, cured by the removal of the stump of a tooth. One of an enlarged tonsil with a narrow base, which it was attempted to tie several times, but without success, and which was cured by the knife. The remaining six were specific ulcerations about the throat; of which, three were of the velum, one of the tonsils, one of the pharynx, and one of the roof of the mouth: all treated by iodine, sarsaparilla, and tonics, besides various stimulating gargles, and were cured in about seven weeks. In the case of ulceration of the roof of the mouth, there was a piece of dead bone keeping up the irritation, to which phosphoric-acid lotion was applied, and with marked speedy effect. The case of parotid fistula was accompanied with inflammation of the gland itself and difficulty of opening the mouth: a probe was introduced frequently into the duct, and a tooth, which was continually acting as an exciting cause, extracted, and thus a cure effected. The harelip was single, and the child a year old: the usual operation was performed, and sutures used. The epulis alluded to had returned after a previous removal: a ligature was placed around it, and the tumor allowed to slough, which process commenced on the fourth day, when nitric acid was applied. The case of cancer of the tongue was of nine months' standing, and was too far advanced to admit of the use of the knife, and, besides, the glands in the neck were involved: alteratives and arsenic internally, with caustic locally, were tried, but to no effect.

Under the head Abdomen we have twenty cases; amongst which will be found the six fatal cases recorded in the table.

Three are injuries: of these, one was a blow on the abdomen and loins, but with no particular symptoms: the patient recovered. In a second, the injury was received by a man butting his head in the left groin of the patient, and throwing him a summersault over his back: on admission, a catheter was passed, and some clear urine drawn off: subsequently the urine was passed with freedom, and in a healthy state. Some local tenderness in the pubic region came on; calomel and antimony were administered, and leeches, with fomentations, applied; but the man died in ninety hours. On examination, the peritoneum was found uninflamed, but it contained a dark-



brown fluid: the bladder was found ruptured to the extent of three-quarters of an inch at its base, and some urine had extravasated behind the peritoneum to near the lumbar region. The third case was one of wound of the abdomen, in a strong, healthy young man, produced accidentally by a knife passing through the parietes by the side of the umbilicus. The omentum protruded, and was returned, after some trouble, by means on a bougie. Rest and low diet were enjoined, and he recovered without a bad symptom.

There are sixteen cases of hernia; eight male and eight female: the latter were all femoral, as also two of the former: the remaining six were oblique inguinal.

Of the six inguinal herniæ, four were cured, one relieved, and one died: of these, two were reducible in persons of the ages of eighteen and forty-nine, and the means employed were the taxis and warm bath; one irreducible, in which there was a fresh protrusion into an old sac of six years' standing, giving rise to symptoms of incarceration: it was but partly reduced. The other three were strangulated scrotal herniæ, two of which were congenital. Both were operated on, and in both the sac was opened. The ages of the patients were seventeen and twenty-nine. The former recovered; the latter died of peritonitis. This man had been admitted into the hospital at a very late period of the strangulation. The third case of strangulation was one of two days' duration, in a man aged forty-seven. The operation was performed, and the stricture divided externally to the sac; but the intestine not admitting of its being returned, the sac was opened, and the bowel exposed. It was found in a bad condition and abraded on a part of its surface: it appeared to be a portion of large intestine. The intestine was wholly returned; the bowels began to act two days after the operation; and the patient left the hospital cured at the end of five weeks.

Of the ten femoral herniæ, two were males and eight females. Two were irreducible, both females; the one aged forty-two, and subject to the disease twenty years; the other aged sixty-six, in whom it had been present six years: in both, fresh symptoms had supervened; but these were combated with calomel and the application of ice. The remaining eight were strangulated. Of these, two were reduced by the taxis, after warm bath and application of ice. The other six were ope-

rated on. Two were males, in one of whom, aged fifty-five, the sac was not opened, and the case did well: in the other, aged sixty-five, the sac was opened; peritonitis supervened; and death ensued. In the four females the sac was opened: two of whom died of peritonitis; their ages were forty-six and forty-eight: and two recovered, the one aged sixty-seven, with very severe symptoms; the other aged fifty, in whom the intestine was found enclosed in a bag of omentum.

The number of deaths in the cases operated on are four in seven, being 57·14 per cent.; and this mortality is greatly owing to the bad state of health of the patients, and the great delay that generally occurs before relief is sought at the hospital. The taxis, and other remediable measures, are pushed to the extreme, and often unwarrantably so, before experienced aid is had recourse to; and the cases are only sent to the hospital when scarcely a chance remains of saving life by operation.

The case of obstructed large intestine occurred in a man aged sixty-four, with symptoms of five days' duration: he had constipated bowels, tympanitis, no vomiting, and comparatively slight degree of constitutional disturbance, besides a reducible scrotal hernia and scirrhus rectum. A flexible bougie was passed per anum to some extent, as also a long flexible tube; enemata were given, and calomel and opium administered, but to no effect: the man died suddenly on the third day collapsed. The autopsy shewed extravasated fæces, and an open ulcer of the cæcum about the size of a shilling.

The diseases of the rectum are ten in number; six males, and four females. Two of external piles, both excised and cured. One of fissure at the margin of the anus following parturition and piles, where creosote was given internally, and yellow wash applied locally, but without relief; but the patient left before the remedies had had a fair trial. Six are cases of fistulæ: four males of the ages of thirty-four, forty, forty-seven, and fifty-two, all operated on, and all cured in the space of five weeks: two were females of the ages of twenty-two and twenty-six, one of whom would not consent to be operated on: in the other, the operation was performed, but the wound would not heal; there was much subsequent burrowing among the glutæi muscles, and also a succession

of abscesses, requiring frequent openings. She was phthisical, but without manifest physical signs, and remained in the hospital about a year.

The remaining case was one of simple abscess by the side of the anus, which was opened and healed up by black wash and poultices.

(E) INJURIES AND DISEASES OF THE INTEGUMENTS.

SUB-DIVISIONS.	Cured.		Relieved.		Unre- lieved.		Not noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Injuries: Contusion .....	17	5	..	..	..	..	..	..	1	..	18	5	23
Wounds .....	19	3	2	..	..	..	..	..	1	..	22	3	25
Burns and Scalds .....	10	3	..	..	..	..	..	..	5	5	15	10	23
Inflammation, Simple:													
Phlegmon and Suppuration	17	4	..	1	..	..	..	1	..	1	17	7	24
Ulceration .....	21	23	3	5	..	..	..	..	..	..	24	28	52
Eruptions .....	2	3	1	..	..	..	..	..	..	..	3	3	6
Inflammation, Specific:													
Syphil. Eruptions .....	3	2	2	..	..	..	..	..	..	..	5	2	7
Erysipelas Traumatic. ....	2	..	..	..	..	..	..	..	1	..	3	..	3
Lupus .....	..	1	..	..	..	..	..	..	..	..	..	1	1
Total Results of Males & Fem.	91	44	8	6	..	..	..	1	1	6	107	57	164
Total Results .....	135		14		..		1		14		164		
Per Centage .....	82·317		8·536		..		·609		8·536		99·998		

The cases of contusion were all slight, with one exception, where the man was a hard drinker, and where sloughing ensued, with subsequent delirium and erysipelas, ending fatally. The others, comprehending the several regions of the body, were all cured, and chiefly by the use of lotio alba, and poultices.

Of the wounds, five were of the scalp; of which two were unimportant. One in a boy, aged nine years: the bone was laid



bare, but he recovered without a bad symptom. In one there was erysipelas, which was cured; in another pneumonia and pleurisy with erysipelas, terminating fatally. One was of the throat, in a woman whose life had been attempted by her husband; the wound, however, was superficial, and she recovered.

Three were wounds of the fore-arm: two of these were lacerated and became sloughy, but healed by granulation: and one was a chronic wound of a year's standing, produced by a piece of glass; it had never entirely healed; an incision was made, and three pieces of glass were removed, and the old wound healed.

Six were of the fingers: five of which were lacerated and contused, and of these two required amputation. The other case was an incised wound, where the extensor tendon was completely divided: the wound healed, but the finger remained stiff; amputation was recommended, but objected to. One was of the thumb, which sloughed and got well.

In one there was a contused wound in the groin from the kick of a horse: sloughing followed, with suppuration and granulation.

In two, lacerated wounds of the knee, which were unimportant.

In three, lacerated wounds of the foot, indolent, and requiring stimulating applications.

In one there was a punctured wound of the great toe: suppuration followed, and involved the dorsum of the foot, but ultimately did well.

A case of ill-conditioned sloughy wound, following the bite of a dog, is also included, which was cured by the application of a carrot poultice.

The last was a case of gun-shot wound of the right hand, where so much injury was done as to require amputation at the wrist-joint, and which proved successful.

Scalds and Burns.—Of these, seven were scalds of the surface, six of which recovered: two were but slight, and were cured by white wash: three were vesicular, and treated with flour: as also one, where the cuticle was removed. The seventh case was of a man aged forty-five, where the scald extended over the whole body, and was accompanied with extreme collapse; he died on the third day. One case was

a scald of the interior of the throat, in a child who had drank boiling water from the spout of a kettle; he was brought to the hospital almost asphyxiated; tracheotomy was performed, and the boy perfectly recovered. The case has been specially published and commented upon by Mr. Cock, in the Medical Gazette.

The cases of burns are fifteen in number: in four the cuticle was merely raised; of these, one was over the face, one in the groin, and two general; the two latter died, and the two former were cured. All were treated with flour and internal stimuli. Eleven in which the cuticle was destroyed; of these, four were cured by means of flour, oil and lime-water, and oil and turpentine; three were adults, and one a child. The remaining seven died; three children, two of the age of fourteen, and two adults. Flour was used in four cases, turpentine, lime-water, and oil in three. Stimulants and sedatives were given to all. The average length of life in these cases depended on the extent of the burn. One lived eight hours; two, two days; two, eight days; one, eleven days, and the seventh, fourteen days. No examination was made in any of the cases.

Under inflammation and suppuration are recorded two cases of traumatic inflammation of the fingers and hand, requiring leeches and fomentation, of which one terminated in suppuration; a case of chronic effusion on the dorsum of the hand; a case of pain in the sole of the foot, occurring in a female aged twenty-five, who was discharged relieved. Nineteen were abscesses: two in the neck; one in the pectoral region, simulating steatoma; one in the axilla; one in the palm of the hand; three in the groin, of which two followed severe kicks, and one after reduction of a hernia; one about the hip, not connected with the joint; one in the perinæum, quite superficial; four in the thigh, three of which were chronic, and were cured after the matter had been evacuated; and one the result of debility after parturition, where extensive burrowing ensued, and subsequently gangrene of the toe, terminating in death; four were in the leg. All these abscesses were cured after evacuation of the pus, with the one exception already mentioned. One case was unnoticed. The remaining case under this head

was one of œdema of the legs, in a female aged twenty, arising from debility and functional derangement: she was presented cured.

Ulceration includes fifty-two cases. Of these, forty-eight are ulcers; thirty-eight of which are on the leg, and comprise nearly every variety; two on the foot; two on the heel; one in the neck, which was strumous; one in the groin, and one on the thigh, both specific; one over the patella, and one on the nates, which were idiopathic; and one on the chest, the result of a blow. Two were healthy, one on the leg and one on the heel: both cured by warm-water dressing and rest. Two inflamed, both on the leg: the one took on a sloughy character, being modified by intemperance, and required support, wine, brandy, and tonics: the other case was in a female aged sixty-three, where iodine and sarsaparilla were requisite. In both, the local treatment was the same, viz. warm-water dressing and rest, and both were cured. Four unhealthy, three on the leg, and one in the groin following bubo: tonics, warm-water dressing, and local stimulants, were required. Ten were sloughing ulcers, all on the foot and leg: in two, the warm-water dressing was used; in two, the beer-grounds poultice and tonics; in one, the nitric-acid lotion; in three, the terchloride of carbon\*; and in two, the linimentum plumbi opiatum.† All did remarkably well; the two latter applications with marked results. Twelve were indolent: of which nine were on the leg, and were treated by rest, poultices, and nitric-acid lotion; one over the os calcis, cured by a splint and the application of compound tincture of benzoin; one on the foot, the result of a burn, cured by nitric-acid lotion; and, lastly, one on the chest, which healed rapidly by the application of the red oxide of mercury. Two were strumous ulcers; one in the neck, cured by poultices and support; and one on the leg, which was only relieved, as diseased bone was keeping up the irritation. Two varicose ulcers, both in females, and both on the leg: one healed by rest and warm-water dressing; the other was

\* Carbonis Terchloridi m. vi. ad aq. distill. ℥i.

† Liq. Plumbi Diacetat. Tinct. Opii. Mellis Rosæ singulorum ℥iii. Confect. Rosæ Gallicæ ℥i.



complicated with old syphilis. She had an attack of pneumonia, for which she was transferred to the physicians: the ulcer, however, was cured by black wash and poultice. Two were menstrual, both on the leg: the one chronic, and treated by nitric-acid lotion; the other inflamed, requiring leeches, rest, and poultices. Both were treated by alteratives and emenagogues. Eleven were cellular-membranous, three of which were unconnected with syphilis; one on the leg, cured by warm-water dressing and tonics; one over the patella, in which black wash was successful; and one in the fold of the nates, cured by emollient poultices. The remaining eight were connected with syphilis, and called by some tertiary. Seven were females and one male. Of these, one was on the thigh, and seven on the leg; three were treated with the terchloride of carbon; one with black wash; one with nitric acid; one with powdered opium; and two with poultices. All had iodine and sarsaparilla internally. One case was a fungoid malignant ulcer, which was only temporarily relieved by cold-water dressing.

In three there were sinuses: one after bleeding at the bend of the elbow; one at the back of the thigh after fever; and one in the leg: the latter was laid open and cured; the two former left unrelieved, the one not allowing the knife to be used.

In one there was gangrene of the toes, the result of cold in a boy of weak circulation, aged seventeen; it was cured by nitric-acid lotion, stimulants, ammonia, and camphor.

The Eruptions comprise seventeen cases.

One of eczema in the lower extremities, in a male, which was only relieved after varied treatment, consisting of sulphur bath, pitch lotion, and tobacco lotion; and, internally, liq. potassæ, with dulcamara and pills composed of pitch.

Two of impetigo over the legs. In one it proceeded on to ulceration of the skin, where the linimentum plumbi opiatum and rest, with aloes and steel, were ordered: the other was cured by an ointment composed of lead, chalk, and camphor, with iodine and sarsaparilla internally.

Two of erythema nodosum: one in a female with amenor-

rhœa, cured by local bleeding and bandage, with aloes: the other a male, where it was dispersed by white wash and purgatives.

One pustular, in a child aged three years, cured by alteratives.

Seven were syphilitic. Of these, one impetigo, cured by antimony, sarsaparilla, and blue pill; one lepra, cured by alteratives, hydrarg. bichlor., and sarsaparilla, and iodine and bark; three ecthyma, cured by iodine and sarsaparilla; and two rupia, where iodine and bark were given.

Three were erysipelas, all traumatic; one over the head following a wound, terminating in delirium and death: the other two were phlegmonous, one on the forearm, the other on the foot, and both cured by punctures, support, and tonics.

The remaining case was one of lupus on the septum of the nose, in a female, which was greatly improved by lot. argent. nit., solut. chlor. zinc., yellow wash, alteratives, iodine, and cascarrilla.

(E<sup>1</sup>) TUMORS.

SUB-DIVISIONS.	Cured.		Relieved.		Un-relieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Subcutaneous.....	.	1	..	..	..	..	..	..	..	..	..	1	1
Encysted.....	..	..	..	..	..	1	..	..	..	..	..	1	1
Steatomatous.....	1	3	..	..	..	..	..	..	..	..	1	3	4
Fibrous.....	1	..	..	..	..	..	..	..	..	..	1	..	1
Melanotic.....	..	1	..	..	..	..	..	..	..	..	..	1	1
Malignant.....	1	..	..	..	3	1	..	..	1	1	5	2	7
Ovarian.....	..	1	..	..	..	..	..	..	..	..	..	1	1
Total Results of Males & Fem.	3	6	..	..	3	2	..	..	1	1	7	9	16
Total Results.....	9		..		5		..		2		16		
Per Centage.....	56·25		..		31·25		..		12·5		100.		

It has been deemed of sufficient importance to make a separate digest and table of tumors, although it ought, more properly, to have been placed under "Integuments," as has been done in Part II. Tumors of the breast, as usual, are not comprised in this division, but are referred to a separate head in the urino-genital system, under "Diseases of the breast." A case of ovarian tumor is here included, but which might have been more appropriately placed under the urino-genital system.

The sub-cutaneous tumor was in a female, over the patella, and about the size of a pea, producing much pain: it was removed, but no relief of the morbid sensation followed. The encysted tumor was situated in the neck; but the patient left the hospital of her own accord, without having undergone any treatment. Of the four cases of steatomatous tumors, one was over the deltoid; one on the upper part of the thigh; a third below the spine of the scapula, ulcerating on its surface; and the fourth was situated beneath the flexor muscles of the fore-arm, and was of large size, its diagnosis was difficult, it was by some supposed to be hydatid. They were all removed by incision, and all healed by granulation. The case of fibrous tumor was situated in the cheek of a boy aged ten: it was removed, and its character was peculiar in resembling melanosis.

The melanotic tumor was in the cheek of a female aged sixty-three, and was excised.

There were seven cases of malignant disease: one fungus hæmatodes behind the ear, which was removed; one over the scapula, left untouched; one about the shoulder, which was only explored; one on the face, a return of the disease for the third time, also left untouched; one about the navel, in a female who was in bad health, and died shortly after admission; one of fungus hæmatodes on the under and inner part of the foot, where the glands in the popliteal space and groin were affected, the health gave way, and ultimately death took place; in the other case the disease occupied the whole of the lower part of the thigh, just above the knee, amputation was recommended, but objected to.

The ovarian disease was of three years' standing, and had



been tapped six months before admission, when three quarts of fluid were drawn off. It then gradually increased, and attained the size of thirty-seven inches, measured round the body at the umbilicus. She complained of a good deal of pain: the catamenia continued regular. On admission, diuretics were first had recourse to, and with benefit; but at the end of six months the tumor beginning to increase, she was tapped, and two ounces of grumous blood, like the contents of a hæmatocele, were drawn off. Symptoms of peritonitis supervened. An abscess formed in the abdominal parietes, which was opened, and afterwards assumed an unhealthy action; large pieces of slough came through the opening; and on one occasion a piece about two feet long was removed, and appeared to be nearly the whole of the ovarian cyst. The woman became exceedingly low; but, under tonics and stimulants, recovered, and left the hospital about a year afterwards, perfectly cured. In the course of the following twelvemonth, while in the country, she was seized with bronchitis and symptoms of phthisis, and died. Unfortunately an inspection was refused.

#### (F.) INJURIES AND DISEASES OF THE LYMPHATICS.

The diseases of the lymphatics comprise eight cases, of which six were males and two females. Of these, seven were cured and one relieved. Four were strumous glands of the neck, three of which suppurated; and one, chronic enlargement. They were treated with support and tonics.

In one, there were indurated glands of the axilla, cured by alteratives. The three remaining cases were absorbent inflammation of the arm, resulting from abrasion on the finger, and were cured by incision and purgatives.

Here, also, several cases actually belonging to this division are not included, as they have already been the subject of analysis, having been complications of more important diseases or injuries, under which they have been mentioned, and thus scarcely warranting a second special notice.

## (G.) URINO-GENITAL SYSTEM.

SUB-DIVISIONS.	Cured.		Relieved.		Un-relieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Bladder :													
Cystitis .....	1	..	..	..	..	..	..	..	1	..	2	..	2
Irritability .....	2	..	..	..	..	..	..	..	..	..	2	..	2
Rough Bladder .....	1	..	1	..	..	..	..	..	..	..	2	..	2
Calculus .....	8	1	..	..	1	..	..	..	1	..	10	1	11
Fungus hæmatodes .....	..	..	..	..	..	..	..	..	1	..	1	..	1
Inflamed Prostate .....	..	..	..	..	1	..	..	..	..	..	1	..	1
Vesico-vaginal Fistula ...	..	..	..	..	..	1	..	..	..	..	..	1	1
Urethra, Inflammation of...	1	..	..	..	..	..	..	..	..	..	1	..	1
Retention .....	1	..	5	..	..	..	..	..	3	..	0	..	3
Stricture .....	11	..	1	..	3	..	..	..	2	..	17	..	17
Fistula Perinæi .....	1	..	1	..	..	..	..	..	..	..	2	..	2
Cancer Penis .....	2	..	..	..	..	..	..	..	..	..	2	..	2
Testicle, Inflammation of...	10	..	..	..	..	..	..	..	..	..	10	..	10
Strumous Disease .....	1	..	..	..	..	..	..	..	..	..	1	..	1
Hydrocele .....	3	..	..	..	..	..	..	..	..	..	3	..	3
Fungus hæmatodes .....	..	..	..	..	1	..	..	..	..	..	1	..	1
Cancer scroti .....	..	..	..	..	1	..	..	..	..	..	1	..	1
Venereal Disease .....	65	25	16	1	3	..	..	..	..	..	84	26	110
Disease of Breast .....	..	4	..	2	..	3	..	..	..	..	..	6	9
Total Results of Males & Fem.	107	30	24	3	10	4	..	..	8	..	149	37	186
Total Results .....	137		27		14		..		8		186		
Per Centage .....	73·656		14·516		7·526		..		4·301		99·999		

Of the cases of cystitis, one was in a person aged thirty-one, not very acute: it was cured by ammonia, ether, opium, and, subsequently, tonics. The other was very severe: the micturition was frequent, and accompanied with intense pain: the urine was ammoniacal, but not albuminous: he had no stricture. Opium injections were used, and demulcents and diuretics given internally, as also the pareira brava. Erysipelas, however, supervened, and he died quite exhausted by the disease.

One of the cases of irritable bladder occurred in a man aged forty: the neck was the part most affected. A cure was obtained by means of liq. potass., hyoscyam., and camphor. The other case occurred in a boy aged three, in whom all the symptoms of stone were present: he was discharged cured.

The two cases of roughened bladder were boys of the age of twelve: the one was complicated with phthisis, and was transferred to the physicians; the other gave rise to the sensation of stone in the bladder.

There were eleven cases of stone in the bladder. Of these, ten were males and one a female. This latter case was a girl three years of age, who suffered from the usual symptoms, and also from severe prolapsus ani. The stone was too large for dilatation of the meatus to be attempted; lithotomy, therefore, was performed by introducing a straight staff into the bladder, and dividing, by means of a probe-pointed bistoury, the upper part of the urethra, as far as to within a quarter of an inch of the neck of the bladder: a pair of forceps was then introduced, and a large stone extracted. The child convalesced rapidly, and subsequently obtained entire command over her water. Of the ten males, eight had lithotomy performed, and all did remarkably well: five were of the age of three years. One suffered from prolapsus ani, and much hæmorrhage after the operation; in another the stone was difficult of detection, and gave rise to scarcely any symptoms: the stone was afterwards found to be coated with oxalate of lime. In a third there were two small calculi present. In one case, of the age of nine, there was scarcely any suffering from the stone, though it was exceedingly large: the usual operation was performed, but the incision was large. The



boy went on well for a few days, passing motions naturally: febrile disturbance then set in, and afterwards sloughing of the rectum, with passage of fæces through the wound, attributed to the bruise offered to that viscus during the extraction of so large a stone through so narrow a perinæum. The sphincter ani was divided, so as to get rid of an impediment to the passage of the fæces through the anus: the boy perfectly recovered. The seventh case occurred in a young man aged nineteen, who had had symptoms of stone eight years, and at the commencement of that period passed a small calculus with his water, and shortly afterwards ten more. About nine months before admission a calculus lodged in the urethra, which was extracted by the forceps, after slitting up the meatus. He was, at the time of admission, in much suffering, and had albuminous urine. For a time he was placed under the physician, who considered the condition of the urine to be dependent upon the irritation of the stone: the operation was therefore performed, but his cure was very tardy, and the wound healed but slowly. The eighth case was in a man aged fifty-nine, who had also a stricture, which was much benefitted by the operation of lithotomy. The two remaining cases of calculus vesicæ were, one in a boy aged twelve, who would not submit to the operation; and the other in a man aged sixty-three, on whom lithotripsy was performed: severe constitutional symptoms set in, followed by urethritis, cystitis, and subsequently death.

The case of fungus hæmatodes of the bladder was in a man aged thirty-four: it was indicated by the passing of bloody and fœtid urine, difficult micturition, the detection of something unnatural at the neck of the bladder by means of the sound, and the presence of a tumor on making pressure above the pubes: vomiting supervened, and death was the result. The inspection after death displayed a large fungoid tumor growing from the bladder.

The inflammation of the prostate attacked a person aged forty, and was probably induced by too much sexual indulgence. By means of leeches and alteratives, and afterwards the occasional use of the caustic bougie, much benefit was obtained; but the man getting drunk, he was immediately discharged.

The vesico-vaginal fistula occurred in a person aged thirty-one, and was of one year's duration: it followed severe labour, where craniotomy had been performed: actual cautery was tried, but proved of no avail.

Under diseases of the Urethra are comprised thirty-one cases; of which one was acute inflammation of the urethra, combined with testitis: it was not venereal, and was cured by leeches and mild mercurials with ipecacuanha. There are seventeen cases of stricture, occurring in persons between the ages of twenty-seven and fifty. Seven were the result of gonorrhœa; three of blows; two intemperance; two exposure to the weather; and three of causes unknown. The duration of the disease, previous to admission, varied from two months to sixteen years. They were all of different trades, but such as are attended with the use of liquors. The strictures were all more or less permanent, spasmodic, or temporary congestion of old strictures. All were treated by catheterism, calomel, opium, and purgatives. In some, local depletion was necessary: in others, the warm bath. In four the caustic bougie was tried; and in three it seemed to be of decided benefit; but in one it produced testitis and much constitutional irritation. Of the three unrelieved cases, two left the hospital suddenly without leave, and the third was affected with thoracic symptoms, which were more an object of treatment than the stricture. One of the deaths was owing to an attack of severe bronchitis, in a man aged fifty, and of feeble powers: the other death occurred in a person aged forty-four, in whom the urethra was laid open through the perinæum, and sloughing to some extent took place.

Retention of urine comprises nine cases; of which seven were consequent on permanent stricture. Of these, six were relieved by warm baths, calomel and opium, catheters, purgatives, fomentations, and leeches. The sixth case was fatal: the patient was a man aged seventy-one, in whom false passages had been made before admission, and sloughing and peritonitis had occurred to a great extent. The other cases were from enlarged prostate, of the ages of fifty-one and sixty-seven: both were attended with severe symptoms, and both were fatal. In one, the cause of death could not be satisfactorily proved, but was supposed to be from the effects of

urea in the system: the other had acute inflammation of the kidneys. In both, the prostate gland had been perforated by the catheter.

Of the two cases of fistula in perinæo, one was in a boy aged nine, following an abscess of nine weeks' duration, resulting from constricted urethra from the healing of the wound after lithotomy four years before: he was relieved by catheters, but was taken away before the cure had been completed. In the other case the age was twenty-one: the disease was consequent on stricture, and cured by catheters.

Two cases of cancer of penis, aged fifty-one and seventy-one. Both commenced as a pimple or wart on the corona glandis; the former, four months before; the latter, seventeen years. In both, the penis was amputated: much hæmorrhage ensued, but the result was favourable in both instances.

Under Testicle are included sixteen cases. Of these, ten were cases of testitis, nine of which were the result of gonorrhœa, in persons whose ages varied from eighteen to twenty-nine; four were acute, three sub-acute, and two chronic: they were all cured by local depletion and antiphlogistics. Two of these were in the same individual, and admitted at different times; at first as chronic inflammation of the one testicle, and afterwards as acute inflammation of the other. The tenth case was in a man aged fifty-nine, the result of a blow: it assumed a strumous character.

The strumous disease occurred in a person aged twenty-eight, and was of four years' standing, and had undergone every possible treatment: castration was performed with success.

Three cases of hydrocele, radically cured by tapping and injecting two drachms of the compound tincture of iodine in six of water.

The case of fungus hæmatodes occurred in a person aged forty-two, and was of four years' growth: it was rapidly progressing, and the cord and lumbar glands had become involved: he left unrelieved.

The cancer of the scrotum was of two years' growth, in a person aged thirty-six: the disease had been twice removed and had returned: he would not submit to any further operation.

Venereal disease, subdivided into male and female:



The ages of the males varied between seventeen and fifty-six: the majority, however, were twenty, twenty-one, and twenty-two years of age. Seventeen were affected with gonorrhœa; in one of whom it was uncomplicated; in three combined with testitis; in four with phymosis; in three with warts; in three with rheumatism; in one with enlarged prostate; in one with superficial excoriations; and in one, inflammation of the penis and abscess of the corpus spongiosum ensued, and urinary fistula followed, requiring the use of catheters: the case was cured.

Forty-eight had chancres. Of these, eleven were uncomplicated, although three were phagedenic; three were combined with gonorrhœa; eighteen with phymosis, one of whom had ulceration of the tongue; twelve with bubo; three with eruptions; and one with warts.

Twelve had buboes, eleven of which were traced to chancrous poison; one had phymosis and sloughing prepuce; one had syphilitic rheumatism; five had secondary syphilis, of which two had disease of bones; one had sores on the head; one, chronic bubo and pleurisy; and one, general bad health and hypochondriacism.

Females; twenty-six cases: all cured excepting one, which was complicated with phthisis. Their ages varied from seventeen to twenty-five. Of these, six had gonorrhœa; two of which were uncomplicated, two were combined with ulcers about the labia, two with abscess of the labia.

Fifteen had chancres: of which six were uncomplicated, five were combined with gonorrhœa, two with bubo and gonorrhœa, and two with eruptions and gonorrhœa, the one lichen, the other rupia.

Two had secondary symptoms, and three had warts.

Under diseases of the breast are recorded one case of acute inflammation following confinement, and cured by leeches, purgatives, and tonics, and by the removal of the milk by the breast-pump; two cases in which there were small, hard, moveable tumors of the breast, in persons of the ages of twenty-two and thirty-nine, both single women: in one it was relieved and diminished in size by means of pressure and local mercurials; the other left the hospital of her own accord, but much improved; one case of cystiform disease in

a person aged forty-six, but she did not remain in the hospital longer than six days. The five remaining cases were scirrhus mammae, of the ages of 33, 43, 45, 48, 55: three were cured by operation: the other two had the glands in the axilla diseased, and it was not considered advisable to submit them to the same treatment.

## (H.) INJURIES AND DISEASES OF JOINTS, &amp;c.

SUB-DIVISIONS.	Cured.		Relieved.		Unre- lieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Sprains .....	10	1	..	..	..	..	..	..	..	..	10	1	11
Wounds .....	2	..	..	..	..	..	..	..	..	..	2	..	2
Dislocation .....	4	..	..	..	..	1	..	..	..	..	4	1	5
Synovitis .....	6	9	..	2	1	..	..	..	..	..	7	11	18
Rheumatic Inflammation ...	1	1	..	1	..	..	..	..	..	..	1	2	3
Hysterical affection .....	..	2	..	..	..	1	..	..	..	..	..	3	3
Strumous disease { of Knee .....	1	..	3	2	2	..	..	..	2	..	8	2	10
{ of Hip .....	..	..	..	..	..	2	..	..	..	..	..	2	2
Loose Cartilage .....	..	..	..	1	..	..	..	..	..	..	..	1	1
Inflammation of Pelvic Li- gament .....	..	..	..	1	..	..	..	..	..	..	..	1	1
Inflamed Bursæ .....	..	5	..	..	..	1	..	..	..	..	..	6	6
Thecal Abscess .....	3	1	..	..	..	..	..	..	..	..	3	1	4
Talipes .....	..	..	..	1	..	..	..	..	..	..	..	1	1
Ruptured Tendon .....	1	..	..	..	..	..	..	..	..	..	1	..	1
Total Results of Males & Fem.	28	19	3	8	3	5	..	..	2	..	36	32	68
Total Results .....	47		11		8		..		2		68		
Per Centage .....	69·117		16·176		11·764		..		2·941		99·998		

Under sprains and contusions are recorded eleven cases; of which one was of the elbow; one of the wrist; one of the hip

and shoulder; one of the knee; and seven of the ankle; and were all cured by means of white wash, leeches, and purgatives.

The two wounds were of the thumb and fore-finger: the former was cured by means of splints, rest, and warm-water dressing. The latter was caused by a bite of a man, terminating in caries, and the finger was ultimately amputated. Of the five dislocations, three were of the shoulder, the head of the humerus being thrown into the axilla: one was immediately reduced; the two others had been long unreduced; one eight weeks, which could not be replaced; the other four weeks, which was reduced by the heel in the axilla. One case of dislocation of the sternal end of the clavicle backwards, producing pressure on the trachea and œsophagus: it occurred in a sailor aged seventeen, from a blow on the shoulder: it was easily reduced by drawing the shoulders back, and was also maintained *in situ* without difficulty. The fifth case was a dislocation of the radius and ulna backwards, which was reduced, but was followed by sub-acute inflammation of the joint.

The cases of synovitis include one of the shoulder, chronic, which was cured by repeated blisters; six of the elbow, one recently, sub-acute; and four chronic: of these, one with effusion, another with thickened ligaments, a third strumous, and in the fourth combined with rheumatism; one of the wrist, chronic and unrelieved; two of the hip, the one with superficial abscess, the other with chronic thickening; seven of the knee, two of which were slight, and accompanied with superficial abscess; one acute, cured by cupping, calomel, and blisters; one sub-acute; and two chronic. The remaining case was sub-acute inflammation of the ankle; cured by the usual treatment.

The three cases of rheumatism were of the knees, legs, and elbow; and were cured by warm-bath, colchicum, salines, and leeches.

The hysterical affections were of the knee, in single women aged eighteen, twenty, and twenty-five: in two there was profuse leucorrhœa; these were cured by aloes, vapour-bath, and cataplasms: in the third, aged twenty, the affection was



of a more confirmed character, in whom menstruation had first appeared four months previously : it resisted all treatment.

Under strumous diseases are arranged two of the hip : one, aged fourteen, with pain and shortening ; the other, aged eleven, with psoas abscess and angular curvature of the spine : both were treated by moxa, seton, and tonics, but left the hospital unrelieved. Ten of the knee : of which six had partial ankylosis, and were admitted for fresh attacks of inflammation and pain, and were relieved by rest, blisters, caustic, alteratives, tonics, and diet. The duration of the disease before admission was, in two, four months ; in two, two years ; and in two, four years. The remaining four had ulceration of cartilage : in one the report merely states a cure was effected, probably by amputation ; in another amputation was recommended, but refused ; and in the two others amputation was performed, but the stumps in both suppurated, hectic fever and diarrhœa supervened, and death was the result.

There was one case of inflammation of the pelvic ligaments after parturition, with discharge from the groin : it was relieved, after a long course, by tonics and support.

The loose cartilage was in the knee, and caused but slight inconvenience, and was therefore left alone.

Under injuries and diseases of the thecæ, bursæ, and tendons, are comprised twelve cases ; five of which were inflamed bursa patellæ, all females, between the ages of fourteen and thirty-five, all single, and servants : two were the result of blows ; and three were idiopathic : four were cured ; one by leeches and purgatives, two by incision, and one by supuration ; the other one was complicated with an ulcer over the bursa, and left unrelieved after every possible treatment ; but this was afterwards accounted for by the patient having kept up irritation by inserting a piece of bone into the wound every night.

One case of ganglion on the dorsum of the foot, cured by emptying the contents and pressure.

There are four of thecal abscess, all males : they were caused by punctured wounds, and were cured by incision, sedatives, and afterwards support and stimulants.

One with inflamed talipes varus, the result of a sprained ankle five years before; and was greatly relieved by conium poultice.

The case of ruptured tendon of the biceps femoris occurred in a boy aged eight, from entanglement of the leg in a cab wheel: the leg was kept flexed on an outside splint, and was cured in six weeks, although he then could not walk quite straight.

(H<sup>1</sup>.) INJURIES AND DISEASES OF BONE.

SUB-DIVISIONS.	Cured.		Relieved.		Unre- lieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Simple Fractures:													
Head and Face.....	3	..	..	..	..	..	..	..	1	..	4	..	4
Spine.....	..	..	1	..	..	..	..	..	3	..	4	..	4
Ribs and Sternum.....	4	1	..	..	..	..	..	..	5	..	9	1	10
Pelvis .....	1	..	..	..	..	..	..	..	..	..	1	..	1
Upper Extremity .....	0	1	..	..	..	..	..	..	..	..	6	1	7
Lower Extremity .....	55	4	..	1	..	..	..	..	1	..	56	5	61
Ununited Fractures.....	1	..	..	..	1	..	..	..	..	..	2	..	2
Compound Fractures:													
Extremities.....	4	..	..	..	1	..	..	..	1	1	6	1	7
Diseases:													
Simple and strumous ....	3	..	4	2	2	1	..	..	3	..	12	3	15
Venereal.....	1	..	..	1	..	..	..	..	..	..	1	1	2
Exostosis .....	2	..	..	1	..	..	..	..	..	..	2	1	3
Malignant .....	..	..	..	..	..	..	1	..	..	..	1	..	1
Total Results of Males & Fem.	80	6	5	5	4	1	1	..	14	1	104	13	117
Total Results .....	86		10		5		1		15		117		
Per Centage .....	73·504		8·547		4·273		·854		12·82		99·998		

The fractures are ninety-six in number; of which eight were in females and eighty-eight in males.

Of the injuries of the head and face, one was of fractured base of the skull, in a man aged thirty-six, which was attended with symptoms of concussion and subsequent compression, and terminated fatally: two were fractured lower jaw, both cured by the ordinary means.

Four fractures of spine; two cervical, both in persons aged forty-five. In the first, who lived only eight hours, it was high up; in the other, who lingered on three days, the fracture was low down: no examination was allowed in either case. Two dorsal; one in a man aged forty-five, who lived a month; the other in a person aged eighteen, in whom the accident had occurred five months before, and who was labouring under weakness of the lower extremities, which was relieved by rest and tonics.

One case of fractured sternum, in a person aged eighteen, caused by the wheel of a cart: it was not attended by any symptoms, and was cured by rest and bandage.

Nine fractured ribs: four cured: one by bandage and rest, one by diaphoretics and expectorants, and two by antimony and bleeding. The other five died; two from exhaustion, their ages being sixty-seven and seventy-one, and three from extensive laceration of the lungs, with emphysema and other injuries.

The case of fractured pelvis occurred in a man aged forty-five: there was also an injury to the urethra. A flannel roller was applied, and he did well.

Of the upper extremity there are seven cases: five fractured humeri, in persons of the middle period of life; one through the surgical neck, and treated by leeches and straight splint; two into the elbow joint, the one treated by the bent position and side splints, the other by evaporating lotions, and the starch bandage at the end of three weeks. The fourth case was a fracture through the centre, and was secured by four short splints and with the arm bent. The other case was a fracture of both arms; on one side of the surgical neck, and on the other of the lower third, with comminution: side splints were used for both, and with perfect success. There was one case of fractured radius and ulna in a boy, which was cured by side splints; and another case of a lad aged



seventeen, who had, in a fall, fractured the radius of both arms: leeches, white wash, and starch bandage were used, and he was perfectly restored.

Of the lower extremity there are sixty-one cases: of which twelve are of the femur; one of the neck, in a woman aged sixty, treated by rest on pillows for six weeks, and then motion allowed, as bony union was not to be expected: ten were of the shaft, about its middle; of which one was treated by the double-inclined plane; seven by the long outside straight splint; and in all perfect union obtained, with one exception, where a severe attack of erysipelas, terminating fatally, supervened. One was laid on a pillow and supported by sand bags, owing to deformity from previous hip disease: perfect recovery and firm union were obtained. —The remaining case was a fracture just above the condyles, and also a fracture of the head of the tibia: the long outside straight splint was applied, as also a back splint for the leg, and perfect union resulted.

Six were fractures of the patella, in males of the middle period of life: two were from muscular action, two from direct blows, and two from falls. All were treated by long straight back splint, and with success.

Forty-three fractures of the leg: of which six were of the tibia alone, produced by direct violence. Three were treated by a long outside straight splint, one by a short outside leg splint, one by side splints, and one by inside leg splint. Ten were of the fibula; in four of which no splints were used; in three the starch bandage was applied at the end of the second week; in three, splints were applied; one had an outside splint, and two, side splints. All were cured.

Twenty-seven fractures of both tibia and fibula. These were treated, fourteen by the bent position on the side, with the leg lying on an outside splint, with or without inside splints as the case required: twelve on the heel, in six of which the long outside straight splint was used; and in six, the peg-box and side splints, with the knee bent. In one, no splints were used, owing to the severity of the contusion and the subsequent sloughing. All were cured in about the same length of time, and with nearly similar success, excepting three; one of a man aged fifty-nine, who had been accustomed to take sixteen glasses of rum in the morning, in

whom much sloughing took place: the limb was laid in every possible position, but at last was kept *in situ* by the interrupted straight splint, and at the end of three months the patient perfectly convalesced. Another case, of a man aged thirty-six, in whom the fracture became compound from sloughing of the integuments, and was not cured till the end of four months. In the third case there was comminution of the bones and delirium, with slow recovery.

The two cases of un-united fractures were both males: the one of the humerus, of eight months' standing, with excess of phosphate in the urine. He had been under much treatment, and was now recommended to have the arm amputated, as it was useless; to which he readily consented, but left the hospital on the following day, before the operation could be performed. The other was of the tibia and fibula, of nine months' duration, and was owing to the imperfect union of a compound fracture: starch bandage was applied, and iodine given internally: the union became complete.

Of the compound fractures, one was of the humerus, cured by angular splints; one of the ulna, where side splints were used; two of the fingers, which were amputated; one of the thumb, which was cured by splint and cold-water dressing; one of the femur, with the knee-joint laid open, a very severe accident indeed, where amputation was immediately performed, but secondary hæmorrhage took place, and hectic, exhaustion, and death ensued; one of the leg, where there was much laceration: amputation was performed, supuration took place, diarrhœa and hectic came on, and death resulted.

Under diseases of the bones; nine are of the spine, of which two were in the cervical region, one transferred to the physicians, but left unrelieved; the other occurred in a girl aged eighteen, where there were displacements of the second cervical vertebræ, the result of fever in a strumous person eighteen months before: she was improved by a back splint, so as to keep the head at rest, caustic issues, and administration of iron and iodine internally. Two in the dorsal region; the one with angular curvature, paraplegia, and deposits in urine, where setons were used and tonics given; but death supervened, owing to softening of the spinal

marrow. The other had loss of partial sensation, and pain in the part, and left unrelieved. In four there was lumbar abscess, between the ages of twenty-three and thirty-three, and in these there was little or no irregularity of spine: in three the abscess was opened, and temporary relief given: the other was complicated with pneumonia, pneumothorax, and diarrhœa, and terminated fatally. On examination there was found very extensive disease of the spine, although there was no evidence externally, and an abscess extending from the dorsal to the iliac regions. The remaining case was one of psoas abscess, which was opened, with relief.

Seven cases of caries. In one, of the palate, which was the result of syphilis: cured by iodine, bark, and acid. One of the clavicle of nine months' duration, with abscess in the arm, and cured by tonics and alteratives, and varied local applications. One of the sternum, where protracted phthisis supervened, terminating in death. One in the lower third of femur, with sloughing sore, the result of a blow: this patient stayed in the hospital only a few weeks, and left unrelieved. One at the inner side of the head of the tibia, from gun-shot wound; and two of tarsal bones, where amputation was performed below the knee, with success.

Three cases of exostosis: one on the tip of the finger, one in the lower part of the femur, and one of the tibia: they were all removed and cured.

One case of nodes and periostitis, relieved by local depletion, blisters, iodine, and sarsaparilla.

One malignant disease of os calcis, in which the result was unnoticed.

#### (I.) INJURIES AND DISEASES OF THE EYE.

Under diseases of the eye are comprised twelve cases; four males and eight females. Ten were cured and two relieved. Four were strumous irritability of the retina in young females, and cured by alteratives, tonics, and varied collyria.

Two cases of hypopion, the result of abscess and ulceration of cornea, and were cured by local depletion, alteratives, and collyr. argent. nit.



One case of nebulous and vascular cornea, where blisters, cupping, purgatives, alteratives, and mercurials were used, but with only slight relief.

Four cases of iritis, all syphilitic; two males and two females. Cured by local depletion and calomel.

One dislocation of the lens into the anterior chamber, already published in the Reports.\*

Under poisons only one case, in a female aged twenty-three, who took a pennyworth of laudanum: the stomach-pump was used immediately, and no bad symptoms followed.

TABLE OF OPERATIONS.

OPERATIONS.	Cured.	Dead.	Not Noticed.	Un-relieved.	Total.
Amputations .....	13	5	..	..	18
Hernia .....	5	4	..	..	9
Lithotomy .....	11	..	..	..	11
Lithotriety .....	1	1	..	..	2
Ligature on Arteries.....	2	..	..	..	2
Trephining.....	1	..	..	..	1
Removal of Tumors .....	20	1	1	..	22
Tracheotomy.....	1	..	..	..	1
Excision of Bone.....	1	..	1	..	2
Miscellaneous .....	12	2	1	..	15
Total Results .....	67	13	3	..	83
Per Centage .....	80·722	15·662	3·614	..	99·998

In this table are arranged all the operations performed at Guy's Hospital during the first six months of 1845. According to our plan, there ought to have been added those of the months of July, August, and September; but these, unfortunately, have not been recorded, owing to the illness of the late Secretary, and are, therefore, unavoidably excluded.

\* Vol. III., New Series, p. 197.

Of the amputations, five were of the leg; of which four were for diseased tarsal bones, and one for compound comminuted fracture of the leg: the latter case terminated fatally, from suppuration and diarrhœa; as also did one of the former. Four were of the thigh; three of which were for diseased knee, and one for extensive railway injury: the latter, with two of the former, died from the effects of phlebitis and suppuration. One was a case of amputation of part of the hand, for compound fracture of three fingers with their metacarpal bones. Four cases, where the finger was removed; one on account of disease, and three for injuries. One case of amputation of a supernumerary thumb in a child; one case of removal of the great toe for carcinomatous ulcer involving its under surface; and two cases of amputation of the penis for carcinoma. All of these did well, and were cured.

Under hernia are nine cases: four were oblique inguinal hernia; two of which were congenital, in boys aged fifteen and sixteen: in both the sac was opened, and both recovered. The other two were males, aged twenty-nine and forty-seven, where the sac was opened: the latter was cured, but the former died of peritonitis. Five were femoral hernia, of whom three were females: in two, aged forty-eight and forty-six, the sac was opened, and both patients died: in one, aged sixty-seven, the sac was not opened, and the patient recovered. The other two cases were males, aged fifty-five and sixty-three: in one the sac was not opened, and the result was recovery; in the other the sac was opened, and the result was death.

Lithotomy comprises eleven cases: one of the age of two and a half years; three of three years old; two of four years of age; one about nine and a half; two seventeen years; one about nineteen; and the other thirty-eight years of age. All were cured, and have been alluded to more fully in the former part of the Report.

Under lithotrixy are placed two cases: one in a man aged sixty-five, where cystitis supervened, and death resulted; the other was in a young man aged twenty-one, where the operation was perfectly successful.

Of the two cases of ligature of the arteries, one was of the

ulnar, for traumatic aneurism, where the sac was laid open and the two ends of the artery tied; the other was of the radial artery, for a wound of it.

The case of trephining was in a child aged thirteen, where there was much comminution of cranial bones, and where the saw was used to remove the pieces; hernia cerebri supervened, but the child perfectly convalesced.

There were twenty-two tumors removed: of these, seven were steatomatous; of which two were on the shoulders, in females aged thirty-two and forty-one, two were on the back, over the scapula, in males aged five and fifty-two, one on the fore-arm under the muscles, in a female aged thirty-nine, where the diagnosis was difficult, one on the buttocks, in a male aged forty-two, forming a pendulous tumor, and one on the upper part of the thigh, in a female aged forty. Ten were malignant tumors: one of the scalp, in a male aged twenty-four; one in the pectoral region, in a female aged thirty-seven; and eight of the breast, all females, whose ages varied between twenty-two and forty-eight: and of these one died and one was unnoticed. Two were melanotic, both in the cheek, and both cured; one a boy aged ten, the other a female aged sixty-three. One case of hydatid of the back of the thigh, in a male aged thirty; one case of epulis, in a female aged seven; and one case of exostosis of the femur, in a male aged seventeen.

The case of tracheotomy was in a child aged four years, which was cured, as has already been previously noticed.

Under excision of bone are two cases: one of the ends of an ununited fracture, in a male aged twenty-three, in which the result was unnoticed; and one of excision of the elbow joint, in a male aged nineteen, which was cured.

The miscellaneous cases are fifteen in number: three dislocations; of which two were of the humerus into the axilla, and one of the hip on the dorsum ilii; two cancer scroti, aged twenty-six and thirty-four, cured; one cancer of the lip, in a male aged fifty-seven, cured; five cases of fistula in ano, all males, whose ages varied from twenty-four to fifty-two, and all were cured. The four remaining cases were operations in the perinæum, laying open the urethra for retention of urine: two of these died, one was cured, and one was unnoticed.



TABLE OF "ACCIDENTS" ADMITTED INTO GUY'S HOSPITAL  
DURING THE FIRST NINE MONTHS OF THE YEAR 1845.

Simple Fractures :			Burns and Scalds . . . . .		46
Inferior Maxilla . . . . .	2		Contusions . . . . .	7	
Vertebræ . . . . .	3		Injuries to Head and Spine . . . . .	8	
Sternum . . . . .	1		Chest . . . . .	3	
Ribs . . . . .	22		Abdomen and Pelvis . . . . .	6	
Clavicle . . . . .	3		Back . . . . .	20	
Humerus . . . . .	9		Joints . . . . .	39	
Olecranon . . . . .	1		Extremities . . . . .	14	
Radius and Ulna . . . . .	2		Eye . . . . .	1	
Radius . . . . .	4			—	91
Ulna . . . . .	2		Wounds :		
Metacarpal Bones . . . . .	1		Incised . . . . .	4	
Pelvis . . . . .	2		Lacerated and Contused . . . . .	14	
Femur . . . . .	23		Punctured . . . . .	3	
Patella . . . . .	13		Gun-shot . . . . .	2	
Tibia and Fibula . . . . .	30		Scalp . . . . .	16	
Tibia . . . . .	15		Abdomen . . . . .	2	
Fibula . . . . .	21		Bite of Horse . . . . .	1	
Metatarsal Bones . . . . .	1		Cut Throat . . . . .	8	
	—	155	Arteries . . . . .	1	
Compound Fractures :				—	51
Cranium . . . . .	3		Concussion of Brain . . . . .	17	
Pelvis . . . . .	1		Hernia . . . . .	24	
Humerus . . . . .	1		Retention of Urine . . . . .	25	
Fingers . . . . .	7		Poison . . . . .	9	
Thumb . . . . .	2		Asphyxia . . . . .	3	
Femur . . . . .	2		Apoplexy . . . . .	1	
Tibia and Fibula . . . . .	6		Drunkenness . . . . .	1	
Tibia . . . . .	2		Tetanus . . . . .	2	
Femur, Tibia, and Fibula . . . . .	1		Foreign body in Trachea . . . . .	1	
Toe . . . . .	1		Hæmorrhage . . . . .	2	
	—	26	Ruptured Saphena-major Vein . . . . .	1	
Dislocations :			Ruptured Liver . . . . .	1	
Clavicle . . . . .	2		Ruptured Bladder . . . . .	1	
Humerus . . . . .	4		Unnoticed . . . . .	2	
Radius and Ulna . . . . .	2			—	80
Hip . . . . .	3		Total . . . . .	467	
	—	11			

## THE SURGICAL REPORT.

## PART II.

FROM OCTOBER 1845 TO MARCH 1846.

THIS division of the Report is by far the most interesting: it contains the notice and result of every surgical case, whether terminating in the discharge or death of the patient, during the six months from October 1845 to March 1846. It comprises 1038 cases in all; and the analysis of these has been arranged precisely in the same manner as that of the first published abstract of the Clinical Society by Dr. Birkett, whose general system of arrangement has been found to excel any other in perspicuity and simplicity; although defective in many instances, as every system of the kind must necessarily be, until increase of experience and attention to the subject shall remove the several difficulties by extending our knowledge of the true nature of disease. Thus, "Tumors" are now replaced under "Integuments;" and "Bones" and "Joints" are united under one head. The Report has been drawn out rather to a greater extent than was at first anticipated; but it was deemed expedient to render it as valuable and as instructive as possible, which could only be satisfactorily effected in the mode we have adopted. The immense mass of matter, contained in the Report, is even given in so condensed a form, as frequently to sacrifice all pretensions to elegance of style; but we have considered, and perhaps justly, the greatest possible condensation more suitable to the character of a Report than a more open and diffused style would have been. We also gladly seize the opportunity of thus offering to the Profession a practical proof of the efficient organization of the Clinical Society.

## GENERAL TABLE OF RESULTS OF SURGICAL CASES,

FROM OCTOBER 1845 TO MARCH 1846.

PRIMARY DIVISION.	Cured.			Relieved.			Unrelieved.			Not Noticed.			Dead.			Total.		GENERAL TOTAL.	Per Centage.
	M.	F.	Per Cent.	M.	F.	Per Cent.	M.	F.	Per Cent.	M.	F.	Per Cent.	M.	F.	Per Cent.	M.	F.		
Injuries and Diseases of																			
A. Brain and Nervous System . . .	16	2	60·	4	1	16·66	1	..	3·33	..	..	..	6	..	20·	27	3	30	2·890
B. Lungs and Appendages . . . . .	3	..	37·5	..	..	..	..	..	..	..	..	..	3	2	62·5	5	2	8	0·770
C. Organs of Circulation . . . . .	2	..	50·	..	1	25·	..	..	..	..	..	..	1	..	25·	3	1	4	·385
D. Organ of Digestion . . . . .	32	18	71·42	4	3	10·	5	2	10·	..	..	..	2	4	8·57	43	27	70	6·743
E. Integuments . . . . .	129	69	77·04	6	5	4·28	8	6	5·44	..	..	..	25	9	13·22	168	89	257	24·855
F. Absorbents . . . . .	4	2	100·	..	..	..	..	..	..	..	..	..	..	..	..	4	2	6	·578
G. Urino-Genital . . . . .	166	85	83·66	13	7	6·66	9	5	4·66	..	..	..	12	3	5·	200	100	300	28·902
H. Joints, Bones, &c. . . . .	147	50	74·90	11	11	8·36	16	9	9·50	..	..	..	16	3	7·22	190	73	263	25·337
I. Eye and Appendages . . . . .	27	30	60·63	19	11	31·91	3	3	6·38	..	..	..	1	..	1·06	50	44	94	9·055
K. Poisons . . . . .	2	3	83·33	..	..	..	..	..	..	..	..	..	..	1	16·66	2	4	6	·578
Total Results of Males & Females	528	259	..	57	39	..	42	25	..	..	..	..	66	22	..	693	345	1038	
Total Results . . . . .	787			96			67			..			88			1038			
Per Centage . . . . .	75·818			9·248			6·454			..			8·477			99·997			



## (A.) INJURIES AND DISEASES OF THE NERVOUS SYSTEM.

SUB-DIVISIONS.	Cured.		Relieved.		Unre- lieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Concussion of Brain .....	5	..	..	..	..	..	..	..	..	..	5	..	5
Spine .....	4	..	1	..	..	..	..	..	1	..	5	..	5
Compound Fractured Skull .	1	1	..	..	..	..	..	..	2	..	3	1	4
Supposed Fractured Base ...	2	..	..	..	..	..	..	..	..	..	2	..	2
Apoplexy and Paralysis ....	..	..	1	1	1	..	..	..	2	..	4	1	5
Epilepsy .....	2	..	..	..	..	..	..	..	1	..	3	..	3
Obscure Head and Spinal Affection from Injury....	2	..	2	..	..	..	..	..	..	..	4	..	4
Neuralgia.....	..	1	..	..	..	..	..	..	..	..	..	1	1
Total Results of Males & Fem.	16	2	4	1	1	..	..	..	5	..	27	3	30
Total Results .....	18		5		1		..		5		30		
Per Centage .....	60.		16.666		3.333		..		20.		99.999		

Of the cases of concussion of the brain, four were slight, and recovery took place in the course of a few days: in one of these there was slight vomiting, and in another a peculiar labouring pulse; the fifth case was somewhat more severe, and was combined with a scalp-wound, being caused by the fall of a crane: there was slight incoherence, headache, and giddiness. Under concussion of the spine are comprised six cases: three of these were in the lumbar region, of which two were slight and accompanied with little or no symptoms, and cures were effected in a few days by local depletion, rest, and purgatives; the other was complicated with a scalp-wound and denuded bone, where there was temporary paralysis of the lower extremities, and involuntary passage of the urine: cupping, purgatives, and calomel were administered, and speedy recovery of the sensation, and but gradual and slow return of motion, resulted. One was

in the dorsal region, accompanied with pain in the neck, and paralysis of the left lower extremity and partially of the left arm; the temperature was also sensibly diminished; rapid recovery, however, ensued after local depletion by cupping and purgatives. The fifth case was in the cervical region, and was of eighteen days' standing; there was pain about the fourth cervical vertebra, with loss of motion and sensation of the upper and lower extremities; but when the upper extremity began slowly to recover its functions, and the sensation also of the lower extremity was returning, sloughing of the nates supervened, the health became impaired, and an attack of spasmodic choking, followed by death, ensued on the ninth day after admission. On examination there was softening of the spinal marrow from the fourth cervical vertebra, which extended down the whole length of the chord. The sixth case was one of the sequelæ of concussion, comprising weakness in the limbs, and slight difficulty in micturition, the urine remaining natural in character, and was but partly relieved by *nux vomica*, *copaiba*, and *liquor potassæ*.

There are four cases of compound fracture of the cranium; in two of which recovery took place: one, a girl aged twelve, in whom the fracture was above the frontal sinuses, and produced by a blow of a red-hot poker; the other, a man aged thirty, where the sinuses were laid open by the bursting of a pistol: both were remarkable for the absence of any symptoms whatever, and the rapidity of recovery; although the child had some exfoliation of bone, which protracted her convalescence. The other two died, both very severe cases: the one caused by three quarters of a hundred weight falling on the back of the head from the height of twenty feet; symptoms of compression immediately set in, venesection was of no avail, and death resulted in eighteen hours. The inspection after death displayed a large quantity of effusion of blood over the hemisphere, and a fissure of the skull at the seat of the injury: the origin of the blood appeared to be from the artery of the corpus callosum. The other case was that of the policeman Hastie; the fracture was comminuted and very extensive, involving the centre of the forehead and part of the orbit: the man went on well for a few days, when

convulsions supervened, with delirium, and coma, and death at the end of fourteen days. The frontal bone was found much comminuted, as also the bony orbit, and the under surface of the anterior lobes of the brain were sloughy to some depth.

The two cases of supposed fractured base were exceedingly interesting. The patients were boys aged twelve and fifteen: the injuries had been caused by direct violence over the temporal region. They at first were collapsed, but on reaction they complained of pain and desire for sleep; the pupils, pulse, and breathing, were natural; they had both considerable discharge of sero-sanguineous fluid from the ear; in the younger this soon ceased, but in the elder it continued for nearly three weeks, and was then chiefly the product of inflammation. Both had strabismus, and perfect motion and sensation of the extremities. In both, paralysis of the portio dura supervened on the second day, and was accompanied with slight febrile disturbance and deafness. They both recovered; the younger one rapidly, the elder one but slowly; but neither had totally regained the function of the portio dura, although it was evidently slowly commencing to resume its power.

Under apoplexy and paralysis are five cases, two of which belong to the former: of these, one was a man aged twenty-nine, who had been knocked down, and though brought to the hospital immediately, was dead. On examination there was much extravasation of blood over the base of the brain and in the fourth ventricle: no fracture of the skull. The other was a man aged fifty-five, who suddenly fell down in the street, and died half an hour after admission in a comatose condition. He had vomiting and convulsions of the left side: the right hemisphere of the brain was smashed in the centre by extravasated blood, which extended into the ventricles to the fourth. The three cases of paralysis were uninteresting: one, hemiplegia of long standing, in a boy aged eleven, who left unrelieved; the second, partial hemiplegia and incontinence of urine, which was only somewhat relieved; and the third was partial paralysis of the fore-arm, from a wounded nerve, the result of a cut by glass.

The three cases of epilepsy were unimportant: one had



recovered when admitted, and only remained a few days another was combined with a scalp wound, but the attacks were very mild; the third fell down in a fit and broke his thigh, for which he was admitted: he had several attacks occurring every day, which prostrated him so that he sank. no examination took place.

The cases of obscure spinal and head affection, as also the case of neuralgia, were uninteresting. The spinal affections were treated by application of moxa, and the head symptoms by a seton.

(B.) INJURIES AND DISEASES OF THE LUNGS AND  
APPENDAGES.

Under this head are included eight cases, six males and two females: the two latter died, as also three of the former. One, a female, was a child aged nearly four years, who had œdema glottidis, from drinking scalding water, and urgent dyspnœa: tracheotomy was performed immediately, and the child went on well for several days, when pneumonia and bronchitis supervened, and death resulted. One case of a male aged thirty, who was in the habit of throwing great weights and catching them, and on one occasion felt something give way, followed soon by intense pain and spitting of blood. On admission he had pneumonia and pleurisy, for which he was placed under the physician, and successfully treated by bleeding, calomel, antimony, &c. One case of asphyxia, from drowning, in a man aged fifty-two, who was brought to the hospital quite dead. The remaining four cases were cut-throats, all suicidal; three males aged forty-one, forty-eight, and fifty; and one female aged fifty-eight. One was but slight, and ought scarcely to come under this head: nothing of importance was wounded, and the wound healed almost by adhesion. The three others were fatal: one, where the wound was between the os hyoides and the thyroid cartilage, extending through the base of the epiglottis, and through the pharynx to the spine, but with slight hæmorrhage. The patient, after four days, died suffocated. One, where it was complicated with torn radial artery, and much hæmorrhage, and speedy death. The third, where the wound was

but small, below the cricoid cartilage, and accompanied with most urgent dyspnœa, and death on the following day. The examination of the body did not reveal the cause of so sudden a termination.

A case of polypus nasi, in a young man aged eighteen, where the disease was in both nasal cavities, of seven years' standing, the polypi being very large, and spreading out the nostrils widely: they were removed by the forceps, with perfect success.

It will be sufficient merely to allude here to the several cases of fractured ribs, which were complicated with injuries to the lungs, as this will be more specially noticed under fractures. Of the fourteen cases of fractured ribs, seven were complicated with visceral injury; one with inflammation; five with emphysema and dyspnœa; and one with extensive lacerated lung. In five of these a cure was effected, and in two the termination fatal.

#### (C.) INJURIES AND DISEASES OF THE ORGANS OF CIRCULATION.

Under this head are placed only four cases, three males and one female; one of whom died, and three recovered. They consist of one case of nævus in a child eight months old, situated near the inner canthus of the eye, and about the size of a marble: a crucial incision was made, the flaps dissected back, and the tumor tied by a double ligature passed through the centre; alarming hæmorrhage occurred during the operation; the nævus sloughed, and the wound granulated rapidly. One case of varicose veins of the lower extremity, in a female aged fifty-four, who had also leucorrhœa: blood was taken from the vein and the leg bandaged, which was of much benefit. The two other cases were aneurisms: one was popliteal, in a married person aged forty, who had been a butcher by trade, but was now a truck drawer. The tumor was the size of two fists, and only of three months' standing, following a fall down stairs; it was rapidly increasing in size. The femoral artery was tied four days after admission. The ligature came away at the end of three weeks, when the wound had nearly healed:

he however had a severe attack of erysipelas, followed by suppuration and burrowing of matter, and an open sinus at the wound. He recovered at the end of a month. The tumor never diminished in size, but became softer, and afterwards increased somewhat in size, when it remained stationary, and so continued. The other case was that of a wine-cooper aged forty-three, who was in the habit of lifting heavy weights, and who had a large pulsating tumor between the sternum and thyroid cartilage, of only six weeks' standing, which, in a few days, rapidly increased in size, producing successively dysphagia, dyspnœa, aphonia, and irregular circulation: the integuments became sloughy, and small quantities of blood escaped: his health gave way, and being unable to swallow any food, he died exhausted on the eighth day. On examination there was found an aneurism of the centre of the arch of the aorta, about the size of a hen's egg, which had burst, and formed a diffused aneurism in the neck, as observed during life.

There are other cases of diseases and injuries of the vessels, but which were complications, and are therefore placed under other heads: they were, "Varicose ulcers, with varicose veins;" "Wounded radial artery, with cut-throat;" "Senile gangrene, with ossified arteries."



## (D.) INJURIES AND DISEASES OF THE ORGANS OF DIGESTION.

SUB-DIVISIONS.	Cured.		Relieved.		Un-relieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Mouth and Throat:													
Harelip .....	1	..	..	..	1	..	..	..	..	..	2	..	2
Cancer of Lip .....	2	..	..	..	..	..	..	..	..	..	2	..	2
Ulcer on Lip .....	..	..	..	..	1	..	..	..	..	..	1	..	1
Disease of Tongue .....	..	..	..	..	1	..	..	..	..	..	1	..	1
Hard Palate ....	1	1	..	..	..	..	..	..	..	..	1	1	2
Tonsils .....	1	1	..	..	..	..	..	..	..	..	1	1	2
Fauces .....	6	3	1	1	..	..	..	..	..	..	7	4	11
Stricture of Œsophagus ....	..	..	..	1	..	..	..	..	..	..	..	1	1
Foreign body in Œsophag. ...	..	..	1	..	..	..	..	..	..	..	1	..	1
Parotid Fistula .....	..	1	..	..	..	..	..	..	..	..	..	1	1
Abdomen and Contents:													
Contusion .....	3	1	..	..	..	..	..	..	1	1	4	2	6
Wound .....	..	..	..	..	..	..	..	..	1	..	1	..	1
Hernia .....	5	4	..	..	..	..	..	..	..	2	5	6	11
Enlarged Liver .....	..	..	..	..	..	1	..	..	..	..	..	1	1
Inj. and Diseases of Rectum:													
Hæmorrhoids .....	2	..	..	..	..	..	..	..	..	1	2	1	3
Prolapsus Ani .....	..	2	..	..	..	..	..	..	..	..	..	2	2
Fistula in Ano .....	6	5	2	..	2	..	..	..	..	..	10	5	15
Sinuses .....	2	..	..	..	..	..	..	..	..	..	2	..	2
Fissure .....	1	..	..	..	..	..	..	..	..	..	1	..	1
Eczema in Ano .....	1	..	..	..	..	..	..	..	..	..	1	..	1
Indurated Tumor .....	1	..	..	..	..	..	..	..	..	..	1	..	1
Scirrhus Rectum .....	..	..	..	1	..	1	..	..	..	..	..	1	2
Total Results of Males & Fem.	32	18	4	3	5	2	..	..	2	4	43	27	70
Total Results .....	50		7		7		..		3		70		
Per Centage .....	71·428		10·		10·		..		8·571		99·999		

**Mouth and Throat.** — The two cases of harelip were double, in male children aged five months and four years: the former was not operated on as he was teething; but the latter was successfully treated by two separate operations, one on each side.

The two cases of cancer labii were in men aged forty and forty-four; the one of eight months' duration, and the other of twelve years': both had been accustomed to smoke with unglazed clay pipes. The disease was removed by excision, and the wound healed by granulation.

The case of ulcer of the lip occurred in a man aged thirty-four, when it took on the character of a syphilitic taint, the patient having had chancre, syphilitic sore throat, and iritis: he had various applications, and took iodine, tonics, &c., but without any relief. The disease of the tongue was a large excavated malignant ulcer, occupying the side and under part of the organ, in a man aged thirty-five, where, after trying every possible remedy for the space of four months, he left unrelieved.

Under disease of the hard palate are two cases of caries of the roof of the mouth; the one in a boy aged sixteen, exceedingly strumous, in whom the disease had occurred a twelvemonth after a blow, and, on admission, presented an appearance as if the constitution had been tainted by mercury or syphilis: he lost most of the teeth, and large pieces of bone came away. Under mild mercurials, iodine, and bark, he recovered, and a silver palate supplied the deficiency with advantage. The other case was in a female aged thirty-four, who was mentioned in the last Report, but re-admitted for a return of the disease, and was perfectly cured after the separation of a piece of bone, phosphoric-acid gargle, iodine, and sarsaparilla, having being prescribed.

The cases of diseased tonsils were of no great interest: the one was severe cynanche, with suppuration of the tonsil, cured by evacuation of the matter, and the exhibition of salines and tonics: the other was in a girl aged ten, who had chronic enlargement of the tonsils, cured without removal.

Under disease of the fauces are included eleven cases of ulcerated sore throat, seven males and four females: all

were traced to syphilis, excepting a female aged thirty-two, who firmly denied having had the disease, although the sore presented a truly specific action: the other females were aged twenty-five, forty-six, and eighteen. They were all cured, excepting the latter, who left before her cure was completed, the ulceration having extended to the pharynx. Of the seven males, five were traced to syphilis, but the seventh wholly denied it, although he had a horse-shoe shaped specific sore on the side of the chest. The primary sore, in these cases, was traced to the prepuce in nearly all, and all had taken mercury: in one, rupia was a complication; in two, papular eruption; and in one, lichen. They all had iodine and sarsaparilla internally, and, locally, nitric acid, solution of caustic, &c.

The stricture of the œsophagus was in a female aged twenty-six, and was transferred to the physicians: she remained in the hospital two months, and left only relieved.

The foreign body in the œsophagus was a small piece of bone, which had lodged opposite the thyroid cartilage: a probang was introduced, but the obstruction was too great to allow of any force. The man was aged forty-six; and he left the next day of his own accord, as he felt no inconvenience from the presence of the body.

The case of parotid fistula occurred in a young woman aged twenty-six, who had an abscess formed in the cheek about nine months before, in opening which the parotid duct wounded: a salivary fistula resulted, which had resisted all treatment. She was, however, cured, after a long time, by means of a seton with threads and pressure.

Injuries and diseases of the abdomen comprise seventeen cases; thirteen of which were cured, one unrelieved, and three were fatal. Ten were males and seven females.

Under contusions are six cases; they were all produced by direct and severe violence; all were attended by collapse, in two instances very extreme; local tenderness was present in three, resembling peritonitis; two were fatal, one in ten minutes after admission, the accident having been caused by a cart-wheel passing over the belly; the other in fifty hours, from peritonitis: the rest recovered, but not without much anxiety, as the symptoms gave rise to the



suspicion of some viscus being ruptured. Their ages were 4, 4, 16, 33, 52, and 68.

The wound was situated in the inguinal region: it was very severe. The patient was an old man aged eighty-one, who had inflicted it upon himself by a pocket-knife. Collapse, followed by peritonitis, delirium, and ultimately death in two days. The intestines had been wounded, and faecal matter had extravasated.

Hernia comprises eleven cases. Four were oblique inguinal scrotal, in males aged 19, 21, 38, and 47: they were all only partially strangulated, and were easily reduced by taxis, after warm-bath and ice had been tried: one had been treated as a case of cholic before being sent to the hospital, and strong purges had been used. Six were femoral, one male aged twenty-four, and five females aged 30, 50, 50, 53, and 63; in three, the male and two females, it was only slightly strangulated, and was reduced after warm-bath and ice had been used: in the three others it was severe: they were operated on and the sac opened: two did extremely well, but the third, aged thirty, was three months gone with child, and had been under much treatment before admission; peritonitis came on, miscarriage ensued, and she died on the sixth day. The remaining case, aged twenty-five, was a most interesting one of internal hernia, where the constipation was of six days' standing, and the result fatal. On examination, a band about one inch and a quarter long passed from the broad ligament of the uterus to the ileum, seventeen inches from the cæcum, twisting and constricting the gut.

The case of enlarged liver and spleen was in a person aged twenty, who was transferred to the physicians, and who left at the end of a month unrelieved.

Injuries and diseases of the rectum.—Three were cases of hæmorrhoids; in two of which they were external in males of the ages of twenty-five and thirty, and were removed successfully by the knife: in the other one they were internal, in a female aged thirty, who was much worn out by excessive hæmorrhages before admission: the piles were therefore tied, but peritonitis supervening, death resulted. In two there was prolapsus ani; one of some months' standing, in a child aged two years, following excessive diarrhœa

after scarlet fever: alterative and mild purgatives, with astringent lotions, were at first used, but without benefit; but four grains of the citrate of iron, with two drops of tinct. opii in syrup, twice a day, acted as a charm; the third dose being succeeded by speedy retraction of the bowels. The other case was in a female aged forty-five, and complicated with stricture of the rectum and piles: bougies were used, and a suppository of soap and opium, with attention to the general health, and a cure resulted.

Of the fifteen cases of fistula in ano, ten were males and five females: the latter were of the ages of 22, 23, 30, 40, and 41, two of whom were married. The disease had existed in all for nearly a year: they were operated on in the usual manner, and all cured. Of the males, six were cured by operation, the ages being between twenty-six and forty-seven, and the duration of the disease from three weeks to one year and a half. In two only was there protracted healing: two were merely relieved; one, aged fifty-three, who was operated on, but being in bad health, sinuses followed which would not heal: the other, aged sixty-four, also suffered from repeated abscesses following the operation, and inflammation of an erysipelatous kind. The remaining two cases were unrelieved; one, aged forty-six, a man of very bad health, who was anxious to be operated on, and a ligature was used: erysipelas, however, ensued, and burrowing abscesses followed, and he was obliged to leave the hospital for change of air. In the second case the age was forty-five; but the lungs being diseased, he was treated accordingly, with little reference to the fistula.

The two cases of sinuses were males aged twenty-eight and fifty-three, and were the results of abscesses: they were cured by being laid open, and with attention to the general health.

The fissure at the anus was in a man aged forty-five, and was cured by division of the sphincter ani. The case of eczema in ano occurred in a male aged forty-eight, who had had it for ten months; but was speedily cured by warm-bath, low diet, ung. zinci, and alteratives.

The case of indurated tumor about the anus was a tailor aged twenty-three: it was cured by being laid entirely open.

The two remaining cases of this division occurred in married females of the ages of forty-one and thirty-six: they had schirrous disease of the rectum, the one of three years' standing, the other of ten years'. Tonics, sedatives, &c., were administered. The one obtained slight relief; the other none at all.

(E.) INJURIES AND DISEASES OF THE INTEGUMENTS.

SUB-DIVISIONS.	Cured.		Relieved.		Un-relieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Injuries :													
Contusions.....	21	1	..	..	..	..	..	..	..	..	21	1	22
Wounds.....	29	5	1	1	..	..	..	..	4	..	34	6	40
Burns and Scalds.....	17	8	..	..	..	..	..	..	15	6	32	14	46
Contractions.....	..	2	..	..	..	..	..	..	..	..	..	2	2
Inflammation :													
Phlegmon and Suppuration	21	16	2	..	..	..	..	..	2	1	25	17	42
Ulceration.....	29	25	3	4	4	3	..	..	4	1	40	33	73
Eruptions.....	2	1	..	..	1	..	..	..	..	..	3	1	4
Erysipelas traumatic.....	3	..	..	..	..	..	..	..	..	..	3	..	3
Œdema.....	..	..	..	..	..	1	..	..	..	..	..	1	1
Tumors, Malignant.....	2	2	..	..	1	..	..	..	..	1	3	3	6
Non-malignant ..	3	9	..	..	2	2	..	..	..	..	5	11	16
Foreign bodies in Integument	2	..	..	..	..	..	..	..	..	..	2	..	2
Total Results of Males & Fem.	129	69	6	5	8	6	..	..	25	9	168	89	257
Total Results.....	198		11		14		..		34		257		
Per Centage.....	77·042		4·28		5·447		..		13·229		99·998		

The cases of contusion presented nothing worthy of notice: they were all cured by simple means. One only was a female, in whom the contusion was in the perinæum: the rest were males. Seven were contusions of the back, re-



quiring local depletion; one of the thigh, with much subcutaneous extravasation of blood, which required incisions; five were of the leg, all slight; six were of the foot, one only of importance, being followed by sloughing, but granulated steadily; one of the great toe; and one where the contusion was not specified.

Wounds comprise upwards of forty cases, in persons whose ages varied from nine to sixty-four. Five were incised wounds, two of which were of the scalp, simple and unimportant; two of the arm, one uniting by adhesion, the other complicated with erysipelas, and healing by granulation; and one of the groin, which was very extensive indeed, and was followed by erysipelas, suppuration, and granulation, cicatrization not being completed till the end of three months. Three were punctured wounds; one of the arm, one of the abdomen, and one of the ankle: they were all superficial, and speedily healed. Twenty-nine were lacerated and contused wounds: of which twelve were of the scalp; nine of these healed, without a bad symptom, by granulation; the three others, aged about thirty, who had been intemperate men, had erysipelas, which was successfully combated in one case by incisions and puncturing the face, but in the other two death resulted, the disease having extended to the membranes of the brain, at a time when the powers of the patient were completely prostrated. Two were wounds of the face, one of the fore-arm, six of the hand, and one of the fingers: all successfully treated by rest and warm-water dressing. The remaining seven were of the lower extremity; of which one was superficial to the knee, being followed by erysipelas and sloughing of the wound, and was treated by incisions, support, and wine; four were of the leg, of which two were slight, and speedily healed; the other two were very extensive indeed, one produced by machinery, the other by a waggon on the railroad: both were collapsed. The former died in four hours, never having rallied, the leg being nearly completely amputated: the other lived three days, gradually sinking, and never sufficiently recovered from the shock. Although the injury in this case was extensive, it had only involved the integuments, exposing the muscles and fasciæ, without injuring these to any extent. One of the ankle, a

very severe contused lacerated wound, with much effusion of blood: it did not involve the joint, neither did it affect any vessel or nerve of any size. Suppuration and sloughing ensued, large ulcers resulted, which became indolent, and never entirely healed. The remaining case was a lacerated wound of the toe, which required some time to heal.

One case of granulating wound, of nearly half the scalp, the result of a wound received about twelve weeks before: it was cured by simple dressing.

One case of gun-shot wound of the leg, where the ball traversed the leg without causing a lesion of any important part: it was extracted by cutting down upon it, where its seat of exit would have been; the ball lay quite sub-cutaneous, and the wound filled up rapidly.

The last case under the head of wounds is an unhealthy wound of the finger in a female, caused by the bite of a man, and which resisted remedies for a long time.

Burns and scalds.—Thirty-four of the former, and twelve of the latter.

Under scalds, three were females of the ages of 2, 5, and 13 years; they were not very severe, and all recovered: nine were males: six, aged 1,  $1\frac{1}{2}$ , 3, 4, 23, and 24, recovered, the extremities being alone injured: three died, aged 4, 4, and 78. The last lived four days, the injury affecting the surface of the chest: the two former lived two days, being scalded over the whole surface of the body.

The cases of burns present a very high mortality, eighteen dying out of thirty-four. Of the sixteen that were cured, eleven were males and five females, ages varying from one and a half to forty-nine years. In three, vesication was produced; in the remainder the cuticle was destroyed, but only to a limited extent; and one of nearly each division of her body. Flour, oil, and lime-water, carron oil, and cotton wool, were beneficially used: the healing sores were dressed with basilicon. Of the eighteen deaths, twelve were males and six females, ages between two and twenty-three: twelve, where the whole surface of the body was involved; one patient living three hours, five five hours, one six hours, two eight hours, one twenty-four hours, one two days, and one five days; the other six cases affected the face, neck, and

arms, or back and chest; two living twenty-four hours, two three days, one eight days, and one about a month. In the majority of these cases flour was used, and stimuli administered; death for the most part being referable to the shock to the nervous system.

The two cases of contraction after burns occurred in females of the ages of seven and fourteen: one was of the foot, which was cured after dividing the bridge; the other was of the bend of the elbow, where the whole of the extensive cicatrix was removed by excision with perfect success.

Phlegmon and suppuration.—The former comprises nine cases, six males and three females, and were all cured: they were persons of the middle period of life. One was a perfect specimen of the term phlegmon, and was situated at the border of the axilla, and terminated in resolution. One was a carbuncle on the back, which was freely incised: it sloughed, and but slowly healed. Three had phlegmonous inflammation of the arm and fore-arm, of a diffused kind; in two of which it terminated in suppuration. Three had diffused inflammation of the dorsum of the hand, and absorbent inflammation of the arm, following slight wounds of the fingers, but speedily subdued, although in one matter had already formed, and was evacuated. The other case was one of diffused inflammation of the dorsum of the foot and ankle, not erysipelatous, but more erythematous in character, and was successfully treated.

There were thirty-three cases of primary abscess; nineteen males and fourteen females; ages varying from sixteen to seventy-nine. Two in the neck; the one strumous, the other chronic, of two years' standing, and resembling an hydatid; both were cured by evacuation of the matter. Four were of the back; of these, one was a suppurating sebaceous follicle, one in the dorsal region, and two in the lumbar, superficial, and unconnected with the spine, and following blows. Seven of the upper extremity; of which two were of the axilla, one was in the pectoral region, two above the elbow, and one of the fore-arm; all cured by the lancet and support, with tonics. In one there was a cellular membranous abscess of the arm, of five months' standing, where acute phthisis supervened, with diarrhœa, exhaustion, and death.



One case of fæcal abscess, in a man aged thirty, who only lived four days after admission, being completely worn out: one case of abscess near the anus, which was opened and cured: one in the perinæum, causing temporary retention until matter was evacuated: four of the groin, three of which were probably buboes, although denied: one was complicated by an attack of pericarditis, and placed under the physician. Seven were abscesses of the thigh, all chronic, requiring tonics and support, and cured, excepting two; one of these being complicated with phthisis, and only relieved; the other, with inflammation of the sac following its incision, acute hectic supervening, with exhaustion and death. Five were superficial abscesses over the patellæ, not suppurating bursæ, three males and two females, and were evacuated and cured. One was a case of abscess of the leg, unimportant; and the last was an unhealthy suppuration on the dorsum of the foot, in a person aged seventy-nine, where gangrene threatened, but a cure was effected by rest, tonics, support, and evacuation of the matter.

Ulcers comprise seventy-three cases, in persons of ages varying from five to sixty-eight: one of the temple, one on the nose, one on the neck, one on the finger, one on the scrotum, one near the anus, two in the groin, two on the thigh, six over the knee, fifty on the leg, three over the ankle, one on the heel, one on the foot, one on the toe, and the others at different parts of the body.

Healthy were ten; eight males and two females. Nine were cured speedily by simple means, and were situated in the fingers, scrotum, groin, patella, leg, and ankle: the remaining one was in a person aged forty-nine, who had gangrene of the foot supervening, by which he was soon prostrated, and, his powers being weak, he shortly sank exhausted.

Unhealthy were five; two males and three females: four situated on the leg, and one by the side of the anus. Three were cured, and two only relieved, as the patients left the hospital too early, of their own accord. The treatment was warm-water dressing, poultice, weak acid lotion, tonics, and support.

Inflamed, properly so called: only one case in a male, on the leg, and cured by white wash.

Indolent, twenty cases; seventeen males and three fe-

males: seventeen of the leg, of which thirteen were cured, one relieved, two unrelieved, and one fatal; one over the knee, cured, one over the ankle, and one on the toe, also cured. Interesting were only two cases; one of the leg, in a man aged thirty-eight, who had had the disease nearly seven years, and was entirely incapacitated from getting a living, as the ulcer reappeared so soon as it was healed. At his urgent request he had his leg removed below the knee: alarming secondary hæmorrhage occurred, with some slight exfoliation of bone; but the patient recovered. The other was also of the leg, in a man aged fifty-eight, where erysipelas of a very extensive and severe form supervened, and where death resulted through exhaustion. The remaining cases were treated with various applications, and poultices: all had alteratives, with tonics and support.

Sloughing ulcers comprise nine; three males and six females: three over the patella, of which two were cured and one unrelieved in females; four of the leg, all cured, and were, two in males, and two in females; one of the groin, in a female, cured; and one of the foot, in a male, also cured. The treatment consisted of rest, alteratives, support, and tonics, sedatives when necessary, morphia being preferred, and, locally, ung. calamin., lot. acid. nit., hyd. nit. ox., beer-grounds poultice, bread poultice, strapping, and bandage, and, in one, liq. calc. c̄ opio.

Gangrenous ulcers, or, more properly speaking, gangrene, occurred in two cases, both males, of the ages of sixty-eight and forty-nine, and both fatal. They were, in the first instance, simple ulcers, one of the heel, and one of the leg: the one went on to gangrene, owing to an ossific state of the arteries of the leg: in the other it was artificially excited by the improper application of irritating substances, which were ordered to be applied by an old woman, who had the reputation of curing every thing. In neither could the gangrene be checked: the one died gradually exhausted; the other was rapidly prostrated by a severe attack of diarrhœa, living only thirty-five hours after admission.

Cellular membranous were fifteen in number; three males and twelve females: twelve of the leg, of which nine were cured, two relieved, and one unrelieved, the latter cases

leaving the hospital of their own accord; two were of the thigh, both cured; and one of the ankle, also cured. The causes in five cases were concluded to be syphilitic, although in several of them it could not be proved; in two, a blow; in three there was functional derangement of the uterus; and in one the irritation left by a guinea worm, which had already been extracted. The treatment was, locally, black wash, caustic to the edges, scarifications of the edges, *lot. argent. nit.*, *lot. acid. nit.*, white wash, poultices, and, in one case, the terchloride of carbon lotion: internally was administered, bark, iodine, sarsaparilla, opium, support, and alteratives.

Strumous ulcers were four; two males and two females: one involving the whole of the neck, in a girl aged eleven, where the discharge was profuse. Simple dressing was applied, and the whole surface healed, when cerebral symptoms supervened, and death resulted from inflammation of the membranes with effusion; one of the ala of the nose, of a specific taint, which was cured by *lot. argent. nit.*, and iodine and sarsaparilla internally; one involving various parts of the body, which was healed by the *ung. picis liquid*; one of the leg, cured by the application of the terchloride of carbon.

Varicose ulcers, with varicose veins: four cases, all females, and affecting the leg; three of which were cured, and one unrelieved (the patient being obliged to leave the hospital in consequence of a death in her family), and were treated by rest, strapping, and bandage.

Menstrual ulcer: one case, in a female aged twenty-five; it was on the leg, and cured by black wash, scarification of the edges, and *emenagogues*.

Carcinomatous: two cases, both males, of the ages of fifty-two and sixty-eight, both unrelieved; one on the temple, involving the upper eyelid, and one on the leg: the former had opium lotion applied to ease the pain; the latter was recommended to have his leg amputated, but he objected.

Eruptions comprise but four cases; three males and one female: in three there was lichen on the arms and legs, of a very suspicious aspect; and in one of these complicated with *ecthyma* and *impetigo* on the arms: they were cured by alteratives, purgatives, sarsaparilla, and iodine: in one the *ung.*



*picis liquidæ* was applied, in another ung. hydrarg. nit. The fourth case was excoriation and scabies of the leg, unrelieved, the patient having been discharged for bad conduct. Many more cases of eruptions were admitted; but they were, for the most, complications, and will be included under the primary affection.

**Erysipelas.**—Here also are but few cases, and for the same reasons as in the last. They occurred as a primary affection but in three, all males, of the age of thirty-three, thirty-six, and forty-seven, caused by blows, two on the arm and one on the leg, and were all three cured. Two were but simple; but the third was of a very severe kind, involving the cellular tissue, terminating in gangrene and sloughing, and requiring all the support and stimulus that could be safely administered.

The case of œdema was in a female aged twenty-two, where the left leg and thigh was affected, and which resisted every possible treatment; and was then found to be artificially induced by the application of a ligature round the thigh.

(E<sup>1</sup>.) TABLE OF TUMORS.

SUB-DIVISIONS.	Cured.		Relieved.		Un-relieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Malignant .....	2	1	..	..	1	..	..	..	..	1	3	2	5
Melanosis .....	..	1	..	..	..	..	..	..	..	..	..	1	1
Non-Malignant:													
Steatoma.....	1	0	..	..	1	2	..	..	..	..	2	2	10
Encysted .....	1	2	..	..	..	..	..	..	..	..	1	2	3
Fibrinous.....	1	..	..	..	1	..	..	..	..	..	2	..	2
Warty growth.....	..	1	..	..	..	..	..	..	..	..	..	1	1
Total Results of Males & Fem.	5	11	..	..	3	2	..	..	..	1	8	14	22
Total Results .....	16		..		5		..		1		22		
Per Centage .....	72·727		..		22·727		..		4·545		99·999		

Tumors, twenty-two in number; eight male and fourteen females: subdivided into malignant and non-malignant. The former comprises six cases; of these, one in a female aged twenty-five, where the tumor was small, and situated behind the angle of the jaw: it was successfully removed, and found to consist of fibrous tissue mixed with malignant cells. One, in a male aged forty-four, was a scirrhus tumor in an old cicatrix on the nates, and was found firmly attached: it was removed and cured. Two were malignant tumors of the neck, very large indeed, in males aged thirty-one and thirty-three; the one involving intimately the jaw, glands, and the large vessels, and extending to the pharynx, producing pressure upon it: it was beginning to soften, and was considered to be too far advanced for removal. The other was in the anterior part of the neck, in the situation of the thyroid gland, of which it was supposed to be a malignant growth: it increased rapidly and impeded respiration; fluctuating at one part, it was tapped, and much fluid drawn off, with relief; the tumor inflamed and sloughed, large masses coming away, until the whole was removed; the patient required much support. One case of melanotic tumor of the fore-arm, in a female aged forty-two, of the size of a walnut, which burst, fungated, and bled much, and required removal, although there were other small pea-like tubercles at other parts of the body. The sixth case was fatal: it occurred in a female aged seventy-one, who had a large fungating malignant tumor in the labium, with the glands in the groin affected: the disease had been removed four years before; the patient lingered on for several months, and then died from exhaustion.

Of the non-malignant tumors, ten were steatomatous; of which two occurred in males and eight in females. Three were on the dorsum of the scapula; the one removed, the other two unrelieved; owing to erysipelas being in the ward, in one instance, and in the other from unwillingness on the part of the patient to submit to the operation. Two were on the arm, and both successfully removed. One over the ball of the thumb, which was removed; the case was interesting as occurring in an anomalous situation, and on account of the difficulty in diagnosing it from malignant and encysted tumors. Two were pendulous from the nates,

and were excised. One was hardly to be called steatoma (unless diffused steatoma), being hypertrophy of the fatty tissue about the knee, unrelieved. The remaining case was in a child aged eleven: it was situated behind the inner malleolus, and extended under the tendo Achillis, and felt exactly like an encysted tumor, which it was considered to be by some, until after removal. Three were encysted tumors; one situated over the outer canthus, one over the inner canthus, and one below the lower eyelid: one was laid open, and two were totally removed; of which one had hairs growing in the interior of the cyst. The three remaining tumors were, one small fibrous tumor of the thigh, removed; one case of warty growth from the nymphæ, excised; one small tumor near the umbilicus, which was not interfered with, as it was stationary and exceedingly small, and could not be raised from the parietes: it had an imperfect feel of dilation on coughing.

Tumors involving the breast are recorded under diseases of that organ.

The two cases of foreign bodies under the integument were, one, in which a bullet had been lodged for three years below the angle of the scapula, but producing no inconvenience until latterly, when it began to cause pain and irritation when the arm was moved: it was extracted. The other was a needle in the thigh, which was cut down upon, and removed.

#### (F.) INJURIES AND DISEASES OF THE LYMPHATICS.

Here, also, but few cases are included, as, in many, the absorbents were but a secondary affection. Six cases only are noticed, four males and two females; and were, inflamed and enlarged glands; two in the cervical region, strumous, one of which suppurated; and four in the inguinal region, which were cured, and were not of a syphilitic nature. Leeches, white wash, and poultices, were applied, and bark and iodine, with support, administered.



(G) INJURIES AND DISEASES OF THE URINO-GENITAL SYSTEM.

SUB-DIVISIONS.	Cured.		Relieved.		Unre- lieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Cystitis. ....	..	..	..	..	..	..	..	..	1	..	1	..	1
Diseased Bladder. ....	..	..	4	..	..	..	..	..	..	..	4	..	4
Irritation. ....	1	..	1	..	..	..	..	..	..	..	2	..	2
Calculus. ....	5	..	..	..	..	..	..	..	1	1	6	1	7
Fungus hæmatodes. ....	..	..	..	..	..	..	..	..	1	..	1	..	1
Vesico-Vaginal Fistula. ....	..	..	..	..	..	..	..	..	1	..	1	..	1
Stricture. ....	10	..	4	..	3	..	..	..	2	..	19	..	19
Retention. ....	10	..	3	..	..	..	..	..	4	..	17	..	17
Incontinence of Urine. ....	2	..	..	..	..	..	..	..	..	..	2	..	2
Fistula in Perinæo. ....	..	..	1	..	..	..	..	..	1	..	2	..	2
Testicle:													
Inflammation. ....	8	..	..	..	..	..	..	..	..	..	8	..	8
Strumous Disease. ....	5	..	..	..	..	..	..	..	..	..	5	..	5
Hydrocele. ....	10	..	..	..	1	..	..	..	1	..	12	..	12
Hæmatocele. ....	1	..	..	..	..	..	..	..	..	..	1	..	1
Fungoid Disease. ....	..	..	..	..	1	..	..	..	..	..	1	..	1
Syphilis. ....	114	76	..	6	4	1	..	..	1	..	119	83	202
Diseases of Breast. ....	..	9	..	1	..	4	..	..	..	1	..	15	15
Total Results of Males & Fem.	166	85	13	7	9	5	..	..	12	3	200	100	300
Total Results. ....	251		20		14		..		15		300		
Per Centage. ....	83·666		6·666		4·666		..		5		99·998		

Under bladder are comprised fifteen cases. Of these, one was cystitis, with suppuration of the lining membrane, accompanied with retention: it occurred in a male aged sixty-seven, where catheterism had been had recourse to: the patient died. The four next cases of diseased bladder

occurred in males, and were relieved. Of these, one was a chronic thickening, with a roughened state of the neck; in one the mucous membrane was nearly wholly abraded; and one was complicated with diseased kidneys, and was attended by nearly all the symptoms of stone, for which he was sent up from the country. The treatment in these cases consisted of tonics, diuretics, and sedatives, &c. The two cases of irritation were but slight, and were only interesting in presenting the symptoms of stone in the bladder: their ages were five and three and a half years. Stone in the bladder occurred in seven cases, six males and one female, the latter of the age of fifteen: the stone in the last case was large, and was broken into pieces as it was being removed through the dilated urethra: severe constitutional symptoms set in, peritonitis supervened, and death resulted in a few days. Of the males; three were five years old, one twelve, one thirteen, and one forty-one years; the latter had lithotritry performed, with perfect success; the others were lithotomized, three were cured, and one was attacked by fatal peritonitis. It is worthy of notice, that in one of the cases paralysis of one side of the body existed; in another a calculus was situated in the urethra, producing retention, and was extracted by the dressing forceps; in one there was great difficulty in detecting the stone; and in one sloughing of the wound took place after the operation.

The case of fungus hæmatodes of the bladder occurred in a person aged fifty-five, accompanied with excessive hæmaturia, and entire loss of controul over the bladder: dark bloody urine, mixed with shreds, was drawn off, which, under the microscope, was found to contain malignant cells: colliquative diarrhœa supervened, and death resulted. On examination after death, peritonitis, pneumonia, and fungoid growths in the bladder were detected.

The case of vesico-vaginal fistula was present in a person aged thirty-five, and who was in a dying state when admitted, and lived only three days, when she sank from exhaustion.

Nineteen cases of stricture, in persons whose ages varied from twenty-five to fifty-eight, the majority of which were traced to a gonorrhœal origin. One was spasmodic, and

accompanied with an irritable bladder, and cured by purgatives, demulcents, and diuretics. The rest were permanent, four of which were but slight, the disease not having existed longer than two years, and were cured by warm-bath, calomel and opium, and occasional catheterism. The remaining fourteen were of long standing, averaging from four to twenty years; of these, five were cured by the usual means, although two were complicated by perineal abscess, not, however, involving the canal; four were relieved only, being complicated with irritable bladder; three were unrelieved, one from leaving the hospital three days after admission, and two from the complication of perineal abscess and sinuses, and diseased bladder; two were fatal. In one, the age was fifty-eight, the disease having existed for twenty years, and been accompanied with much suffering from perineal abscess and fistula, and innumerable false passages: the patient lingered for a month. The other patient, whose case is fully detailed in the *Guy's Reports* for October 1843, page 541, was suffering under diseased kidneys, retained urine, and diarrhœa. The stricture was of such cartilaginous hardness, with so much induration of the surrounding textures, that a catheter could not be passed, and the bladder was punctured through the rectum: his health, however, was already too far debilitated, and he gradually sank.

Retention comprises seventeen cases: one in a boy aged twelve, from the presence of a calculus in the urethra, which was extracted by the forceps: one case, aged twenty-one, of partial retention and difficult micturition, owing to a very contracted phymosis, which was slit up: three from exposure and immoderate drinking, in persons aged 33, 41, and 58, who were relieved, and so far cured, by catheters and diuretics: one case from perineal abscess, the result of a blow; it was cured by incision: five were complicated with stricture, in persons aged 20, 30, 38, and 60; of whom one was cured, three relieved, and one died: this last, whose constitution was bad, had perineal abscesses, diseased bladder, and sloughing of the scrotum and pubes. In six the retention was owing to enlarged prostate, in people aged 60, 64, 66, 68, 73, and 77: of these, three were cured by



careful catheterism, tonics, and diuretics, such as pareira brava, diosma, &c.: the three others died, being affected with diseased bladder and false passages.

Incontinence of urine occurred in two cases, in males aged 53 and 68, and resulted from want of tone in the bladder: they were successfully treated by the pareira brava, and suppositories of belladonna and hyoseyamus.

The two cases of fistula in perinaeo were in persons aged 46 and 60: the former followed an abscess, the result of a blow; an incision was made, and catheters used, from which, however, much irritation and surrounding inflammation ensued; the testicle also became affected, and other fistulae were formed, until at length the urine flowed out of five several openings: the patient, after staying in the hospital for nearly six months, went into the country to regain his health. The other case was complicated with stricture; and the catheter and the lancet being objected to, the constitution gave way, and death ensued.

Testicle.—Eight were cases of testitis, between the ages of nineteen and thirty-four: they originated in gonorrhœa, and were cured by the usual means.

Strumous disease comprises five cases, in persons aged 24, 25, 28, and 32: the average duration of the disease was nearly three months, commencing as a common abscess, bursting, and then exuding fungoid granulations, large, indolent, and indisposed to heal. By means of mild mercurials twice a day, with the iodide of potassium, and simple local applications, they were perfectly cured.

There were twelve cases of hydrocele: the ages varied from sixteen to seventy-one, and the duration of the disease from four months to twenty years. Ten were cured; seven by paracentesis and injection, in three instances with port-wine and water, and in four with the tinct. iodinii co. and water. Two were cured by tapping alone, absolute rest being insisted on: the age in one case was 68, both sides were affected, and on one side complicated with hernia: one in a person aged 71, where the trocar only was introduced into the sac, and the fluid compressed into the surrounding cellular tissue; sloughing of the scrotum ensued, but a cure was ultimately effected. One was unrelieved, the disease

being complicated with phthisis. The remaining case was tapped and injected with port-wine and water, but to no effect: the tinct. iodinii c. with water was then used; but suppuration following, the sac was laid open by the knife, and soon filled up by granulation: severe pneumonia, however, supervened, and the patient died.

The case of hæmatocele was exceedingly interesting: it occurred in a person aged 23. It commenced insidiously, without any assignable cause, two years before his second admission. With same complaint the swelling had been twice explored, and been considered to be malignant; this was also supposed to be the case on his second admission, but not unreservedly so. An incision was therefore made into the whole length of the tumor, and the contents of a hæmatocele exposed, which were cleared out, and a healthy testicle observed. The sac was made to suppurate; granulations sprung up; and at the end of nearly four months he was perfectly cured.

The malignant disease of the testicle affected a person aged forty-one: it was of the nature of fungus hæmatodes. It involved the cord and lumbar glands, and was of a very large size. Neither pain nor inconvenience were complained of, and the health was good.

Syphilis comprises 202 cases, and is divided into male and female. Of the male, there are 119 cases, being somewhat short of the general average, owing to the closing of the ward for two months, to allow of its being thoroughly cleansed, as a severe form of cynanche and erysipelas had broken out, and attacked nearly all the patients. Fifteen were gonorrhœal, in persons between fifteen and twenty-nine years of age: one was uncomplicated, six combined with phimosis, five with testitis, one with paraphimosis, and two with bubo, and scars of healed chancres. They were cured in the ordinary way. Two cases of paraphimosis: the one of one week's standing, and reduced after white wash had been used, and antimony given internally: the other was of three weeks' duration, where the glands had already become gangrenous: a tight band was relieved, nitric acid applied, and the patient was cured.

Seventy-three cases of chancre. Four were on the exterior

of the penis: of these, one at the root of the penis, combined with bubo and gonorrhœa; one of superficial ulceration of the integuments; both cured by yellow wash: one an ecthymatous tertiary sore, with open bubo; and one an irregular oval chancre: the last two were cured by the *lot. argent. nit.*, with alteratives and mild mercurials internally.

Thirty-nine involved the prepuce: of which, seven were fringing, *i.e.* affecting the free edge of the prepuce, producing phymosis: of these, two were complicated with bubo; two with gonorrhœa, and one with severe cyanche; one with lepra of the scrotum; and one with open ulcer in the groin, and ulceration of the integuments of the lower part of the abdomen: black and white wash, with mercurial alteratives, were the chief remedies used: all were cured. Thirty-two were sub-prepuceal, attacking the inner surface of the prepuce: of these, six were uncomplicated; three cured by caustic and white wash, one by *lot. arg. nit.*, one by black wash, and one, where the chancre was burrowing and sloughing, by the *lot. acid. nit.*, with opium internally. Two were combined with frœnal chancres; the one herpetic, the other ovoid and irritable in character: both cured by the *lot. argent. nit.* Seven with phymosis: three cured by injecting black wash under the foreskin, and four by the *lot. argent. nit.* Six with phymosis and bubo: black wash was used in five cases, and *lot. alba* in the sixth: one man was operated on for the phymosis, and another had severe erysipelas. Five with bubo; of which, three were cured by *lot. arg. nit.*, and two by *lot. nigra*. One with phymosis and ecthyma at the anus: unrelieved, as the patient would not take the medicines. Two complicated with gonorrhœa; one with testitis; one with papular eruption; and one with warts. All these cases, for the most part, were treated internally, by iodine, sarsaparilla, bichloride of mercury, Plummer's pill, or *pil. hydrarg. c̄ opio*.

Three were frœnal chancres; the one cured by caustic, the other two by black wash; they were complicated with a sloughing open bubo, and a severe attack of cyanche in the one case, and a suppurating bubo in the other.

Seven were situated on the corona glandis; of which, six were uncomplicated, and in the seventh there was a small



fistulous opening in the scrotum, the remains of an abscess, besides a severe attack of erysipelas. They were all cured by black wash, caustic, alteratives, and slight mercurials. One of these patients, however, was on the point of leaving, when some ecthymatous patches appeared on the thigh, arm, and cheek, which increased in size and number till half the body was covered, and very much resembled rupia: his health gave way, cough supervened, appetite failed, emaciation and exhaustion followed, and death at the end of two months resulted.

Twenty involved the glans, and all were cured. Of these six were uncomplicated, and were treated, three with black wash, two with caustic, and one with linimentum plumbi opiatum. Five were complicated with bubo; of which two were superficial chancres, and in one the primary chancral vesicle was present: one was treated with white wash, three with black wash, and one with caustic. One case was accompanied with bubo, gonorrhœa, and phymosis; and one with bubo and eruption: both cured by black wash. Two involved the meatus; one combined with phymosis, where lot. nigra was used; the other complicated with gonorrhœa and nodes, where caustic was beneficial. One with paraphymosis; and one with paraphymosis and secondary eruptions; both cured by caustic. Three were eroding, phagedenic chancres, one of which was combined with syphilitic lichen on the anus. The applications used were, in one, the yeast poultice; in another, the linimentum plumbi opiatum; and in the third, a lotion composed of balsamum Peruvianum et liq. opii sedativus, of each an ounce; and internally was administered iodine and sarsaparilla, antimony and bark, and mercurial alteratives; and occasionally opiates and tonics.

One case of warts, involving the glans and prepuce, to which caustic, acetic acid, and creosote, were successively applied, and a cure effected.

Fourteen cases of bubo, where the primary sore had healed, but its seat in nearly all the cases was, unfortunately, unnoticed. One was an inflamed bubo, and cured by leeches and blisters; four were suppurating buboes, one of which formed burrowing sinuses, and healed with difficulty: they were

treated with poultices, free incisions, and iodine with sarsaparilla. Six proceeded on to ulceration; of these, three assumed a sloughing phagedenic action, requiring morphia internally, and the nitric-acid lotion, and linimentum plumbi opiatum locally. The other three were exceedingly irritable and modified by struma; and black wash, lot. argent. nit., and the nitric oxyde ointment were used with success. The three remaining cases of bubo were combined with syphilitic eruption, where the primary disease had been seated on the prepuce, and had been healed by mercury: iodine sarsaparilla, tonics, calomel, and opium, were the chief internal remedies.

Eleven were cases of syphilitic eruptions: lichen over the body in two persons of the age of twenty-two; the one had had a coronal chancre ten weeks before, and had been cured by mercury; both were treated with tonics, iodine, sarsaparilla, and warm-bath: one was cured, the other left unrelieved, in consequence of erysipelas being in the ward. Six were cases of ecthyma, of which one was complicated with sore throat, and one with pains in the joints: the others were situated, in two cases over the face and arms, in one over the hand and arms, and in one over the legs; these, for the most part, approached to rupia in character. They were treated with iodine, sarsaparilla, ammonia and tonics, and were all cured excepting one, where relief was given. Of the three remaining cases, in one there were papulæ on the face and arms, with tubercles on the face and general cachexia, cured by opium, iodine, and sarsaparilla; one was not specified, but was cured by bark and iodine; and in one there were complicated with the eruptions, ulceration of the side of the nose and severe erysipelas, from which the recovery was slow.

One case of open nodes on the forehead, the remains of syphilis contracted four years before: it was cured by nitric-acid lotions, iodine, and sarsaparilla.

One case of profuse salivation from mercury, of four years' duration: it was cured by bark, acid, wine, and porter.

Of the female venereal cases eighty-two are noticed: the ages were between fifteen and thirty-two. Seventy-five were cured, six relieved, and one unrelieved.

Six cases of gonorrhœa were without complication; and were treated with zinc and alum injection, and purgatives. Six cases of gonorrhœa, with œdema of the labia, were cured by the same plan of treatment, with the addition of the local application of *lot. alba*. In two of these cases there was inflamed throat, requiring gargles and tonics. Six cases of gonorrhœa, with excoriation of the labia, were also similarly treated, and in most the black wash used locally. There were three cases of gonorrhœa, with condylomata: the latter were treated by caustic and the knife. Three cases of gonorrhœa with buboes were cured in the ordinary way. Eleven cases of gonorrhœa with chancre: the latter was treated locally; in five cases by black wash; in three by white wash; in two by *lot. argent. nit.*; and in one by *lot. calc. c̄ opio*. Internally was given iodine, sarsaparilla, iron, *liq. hyd. bichlor.*, and Plummer's pill. One of these cases was complicated with lichen, and the chancre was a very perfect specimen.

Twelve cases of chancre: of which eight were uncomplicated and situated on the labia; of these, five were superficial and three phagedenic: four were cured by *lot. nigra*, and four by *lot. calc. c̄ opio*. Mercurial alteratives, and iodine and sarsaparilla were internally administered, as also occasionally bark, with ammonia. Of the four other cases, three were complicated with bubo, and one with eruption: the *lot. nigra* was used in three, and caustic in one case; and Plummer's pill and *liq. hyd. bichlor.* given internally.

Four cases of bubo: one suppurating, opened and cured; three had already burst, and formed open unhealthy wounds, which were cured by *lot. arg. nit.*, *lot. nigra*, and poultice.

Six cases of syphilitic eruptions: one of lepra, three lichen, one impetigo, and one eczema over the pubes. Iodine, sarsaparilla, and bark were given internally; and in the latter case tincture of iodine was applied over the pubes.

One case of ulcers on the forehead, the remains of rupia, relieved by tonics, &c.

One case of syphilitic rheumatism, relieved by bark, colchicum, antimony, &c.

Eight cases of condylomata and warts: in four they were



removed, in two the yellow wash was applied, and in two caustic used. Seven were cured, and one relieved.

The remaining sixteen cases were affections of the labia: of which two were œdema, and cured by lot. alba. Five were œdema and excoriations; white wash was used in four, and lot. calc.  $\bar{c}$  opio in one. Eight were excoriations; in four white wash was used; in two the lot. argent. nit.; and in two the black wash. Tonics and alteratives were given internally. One was a common abscess, which was cured by the lancet.

Diseases of the breast comprise fifteen cases: of these three were irritable, accompanied with amenorrhœa, in single persons of the ages of seventeen, nineteen, and twenty-seven; emenagogues, purgatives, blisters between the shoulders, warm-bath, and iron, were duly administered; two were cured and one relieved. One case of chronic inflammation of the mamma was cured by leeches, purgatives, and diaphoretics. Two cases of abscess, one following a blow, the other accompanying lactation, were cured, the abscesses being allowed to burst and discharge of themselves; the health being supported by wine and tonics. The remaining nine cases were malignant scirrhus disease, occurring in persons aged 35, 42, 43, 46, 48, and 71. Of these, four were cured by the knife, in one of whom the operation nearly proved fatal, owing to a very severe attack of erysipelas; and in one of these cases, also, the disease had formed a large, open, fungating sore, discharging a profuse fœtid serosity; but the glands, with the axilla, were free, and thus so far the operation warranted. Four were unrelieved; two from an unwillingness to submit to the operation, and two from the advanced state of the disease, the neighbouring glands being extensively involved. The last was a case of recurrence of the disease after an operation which had been performed eighteen months previously; the patient was in bad health and the disease in an active state, rapidly increasing, and producing intense pain and suffering: she lingered on for three months, and then sank from exhaustion.

(H.) INJURIES AND DISEASE OF JOINTS, BONES, &c.

SUB-DIVISIONS.	Cured.		Relieved.		Unre- lieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Joints:													
Sprains and Contusions.....	23	5	..	..	..	..	..	..	..	..	23	5	28
Dislocations .....	5	1	..	..	2	..	..	..	2	..	9	1	10
Synovitis .....	11	5	4	3	1	2	..	..	..	..	16	10	26
Obscure pains about Joints..	1	2	..	..	..	..	..	..	..	..	1	2	3
Strumous disease.....	9	3	2	6	7	4	..	..	1	1	19	14	33
Disease of Bursæ.....	2	13	1	..	..	1	..	..	..	..	3	14	17
Talipes .....	2	..	..	1	..	..	..	..	..	..	2	1	3
Bones:													
Simple Fracture .....	66	16	2	1	1	..	..	..	8	1	77	18	95
Compound Fracture .....	15	2	..	..	..	..	..	..	2	..	17	2	19
Ununited Fracture .....	3	..	..	..	1	..	..	..	..	..	4	..	4
Inflammation, &c.....	10	3	2	..	4	2	..	..	2	1	18	6	24
Osteo Sarcoma .....	..	..	..	..	..	..	..	..	1	..	1	..	1
Total Results of Males & Fem.	147	50	11	11	16	9	..	..	16	3	190	73	263
Total Results .....	197		22		25		..		19		263		
Per Centage.....	74·904		8·365		9·505		..		7·224		99·998		

The twenty-eight cases of sprains were, for the most part, unimportant, and were cured by simple means. Seventeen were of the ankle, one of which was complicated with sloughing of the integuments: four of the knee: four of the hip: two of the shoulder; in one, the neck of the humerus was at first supposed to be fractured, but the diagnosis was difficult, owing to the severe contusion and great swelling. One was of the sacro-iliac synchondrosis in a female, the result of a fall on the sacrum.

Dislocations include ten cases. Of these, three were of the acromial end of the clavicle, in persons aged 32, 33, and 50:

two were reduced by drawing the shoulder well back, and by a sudden twisting of the arm over the front of the same shoulder; the other case was unrelieved, although all possible means were attempted to effect the reduction. Two of shoulder into the axilla: one in a female, of some weeks' standing, which was reduced; the other in a male, aged fifty-three, who had met with the accident six weeks before, and who had had a subsequent attack of rheumatism, so that no possible force could replace it. Two were of the elbow (the radius and ulna being thrown backwards), which were easily reduced, but were complicated with secondary inflammation. One was a dislocation of the hip, the femur being thrown over the ischiatic notch, occurring in a male aged forty-six, and of twelve hours' duration: it was reduced by extension with the heel in the crutch. The other two cases of dislocations were fatal. One was a very curious and rare dislocation of the astragalus, with the tibia and fibula (the ankle-joint being entire) off the os calcis and os naviculare, occasioned by a fall of thirty feet down the stairs of a dock basin. The precise condition of the position of the bones was not clear: reduction was attempted, but to no avail: sloughing of the integument supervened, and the articulating surface of the astragalus exposed. The patient's constitution began to suffer, and amputation was had recourse to on the seventh day: the stump sloughed, and fatal prostration ensued. The tendons about the ankle were found much displaced: the tibialis posticus was thrown in front of the tibia; and the flexor longus pollicis in the interosseous groove on the under surface of the astragalus: the vessels were entire: the posterior tibial nerve was much stretched over a sharp edge of bone. The other dislocation was also of exceedingly rare occurrence, and its nature was only ascertained after death: it was that of the sacrum thrown forwards from off the ossa innominata. It was produced by a sudden blow, on the lower part of the spine, by the buffer of a railway-engine. The man was brought in insensible, with a severe scalp-wound, and fractured ribs and emphysema. He lived several hours. The *sectio cadaveris* displayed, besides the dislocation above alluded to, a fracture of the spine in the dorsal region.



Of the twenty-six cases of synovitis, four were acute: of these, two were of the knee, in a male and female; one of the elbow, in a boy aged twelve, accompanied with acute osteitis of the lower end of the humerus; and one of the wrist-joint, in a female aged twenty-four, who had only just been confined. They were all cured by the local application of leeches and cataplasms, and the administration of salines, calomel, and opium, with strict rest of the joint.

Two cases were sub-acute inflammation of the knee, in a male and female aged sixteen and nineteen, and cured by leeches, alteratives, and strapping.

Sixteen cases of chronic synovitis: of which, one was of the shoulder, in a male aged fifty-four, and cured by a seton and colchicum, notwithstanding a severe attack of erysipelas. Twelve of the knee: seven in males and five in females, whose ages varied from seventeen to forty. Of the males, two were cured, four relieved, and one unrelieved; and of the females, one cured, three relieved, and one unrelieved. The very small proportion of cures in these cases was, for the most part, owing to the chronicity of the complaint, being, in some cases, of several years' duration. They were all treated upon similar principles, viz. strict rest, blisters, local depletion, iodine, tonics, colchicum, and mercurial alteratives. Three were of the ankle: two were cured, and the other unrelieved, in a female aged forty.

Four cases were rheumatic synovitis; three males, of the ages of 24, 25, and 50, and one female, aged seventeen. These were of some months' duration; but were cured by colchicum, iodine, and diaphoretics, with occasional alteratives.

Under obscure pains about joints are included three cases: one a male, aged thirty-four, who complained of pain in the hip, which was soon cured by camphor liniment. The other two were females, aged seven and nineteen: the former was sent to the hospital as the subject of diseased hip, but was discharged, cured, at the end of three weeks; the other had hysterical pains about the knee, and was cured by a blister behind the trochanter, and aloës with the compound steel mixture internally.

There were of strumous diseases of joints thirty-three cases. Two of the elbow, in males aged eighteen and nine-

teen: the one, where the head of the radius was involved in the disease; the joint was laid open from behind by the H incisions, and the head of the bone snipped off: he was presented cured, after a slow recovery. The other case was of only short duration, and was cured by iodine, soda, and sarsaparilla, with rest by means of an angular splint, and by friction with the stronger mercurial ointment. Two of the wrist-joint, in boys aged six and seven, which were very chronic: the one was relieved, the other unrelieved. The remedies were tonics, alteratives, with purgatives and rest. Nine of the hip: of which six were in females, aged 18 months, 12, 16, 21, and 27 years. Of these, one was cured by a seton and tonics; four were relieved, two of which were removed before a fair trial had been given to the remedies; the sixth was unrelieved, as the disease was complicated with abscess, supervening upon the use of the straight splint and the application of a moxa. In all these cases, tonics, wine, and support, with rest, were prescribed, and, locally, blisters, compound tincture of iodine, and leeches were necessary. The remaining three cases were in males, aged 11, 24, and 25 years. The first was a very severe case, being complicated with abscess; but without relief, in consequence of the premature removal of the patient. Of the other two, one was relieved and the other unrelieved: they were chronic cases, and void of interest. Fifteen of the knee; nine males and six females. Of these, five cases were but slight, being, for the most part, recurrent attacks of inflammation of old standing disease. They occurred, four in females and one in a male, ages between five and thirty-six: two were relieved, and two were cured, by the use of blisters, leeches, caustic issues, and strapping, with purgatives and tonics. Six had ulceration of cartilage; four were males and two females, ages from five to thirty-eight. In four of these amputation was performed, which proved successful in three; the fourth was fatal, from the effects of phlebitis and absorption of pus. Of the two females, one was too far advanced for any operation; the case terminated in death: in the other, amputation was declined, and the patient left unrelieved. Four had already proceeded to ankylosis; this having taken place at so acute an angle, that the limb was altogether useless, and in the way: they were all males,

and the ages varied between seven and fourteen. Amputation of the thigh was successfully performed in three cases, but the other was not operated on, as erysipelas was in the ward. Five of the ankle-joint; three males and two females. The latter, and two of the former, were unrelieved, and the fifth case was cured: ages varied from two and a half to thirty-six years: the disease was of some standing. Tonics were duly administered, and blisters, iodine, strapping, starch bandage, and cataplasm applied.

Under bursæ, tendons, &c., are arranged twenty cases. Fourteen were diseased bursæ patellæ, all occurring in females; four of the age of 16, three 19, one 17, one 18, one 21, and two 25, all single, and servants; one aged 39, and one 62, both married. Thirteen were cured; one by white-wash poultice, four by leeches and blisters, seven by incision, and one by a seton: in the remaining instance the patient left of her own accord, unrelieved. One case of enlarged bursæ, about the elbow, of long standing, but recently inflamed from a blow: it was relieved by leeches, &c. Two cases of ganglionic effusions about the knee. One below and beneath the external head of the gastrocnemius, simulating aneurism, and cured by blisters and rest: the other on the inner side of the knee, under the fascial expansion of the tendons of the sartorius, gracilis, and semitendinosus, and thus complicated as to its diagnosis. It was treated by puncture, blister, and pressure, and, lastly, a seton, by which it was effectually cured.

Three cases of talipes; two males and one female; the latter aged five, where the tendon Achillis was divided; but the child left only relieved. Of the two males, one was aged ten and the other twenty; both cases of talipes equinus, and in both was the tendon Achillis divided with success.

The simple fractures were ninety-five in number, and were as follows:—Of the lower jaw, four cases; three males and one female: of these three were cured and one unrelieved, as the patient left on the second day without cause. One case was in the hospital a long time, owing to exfoliation of bone and its slow separation. Of the ribs, fourteen cases, all males; of whom twelve were cured and two died. Seven were unaccompanied with visceral injury, and were cured by the application of a roller and the exhibition of



calomel and antimony in three cases; bleeding being only had recourse to in one case. Of the remaining seven cases, in one there was much congestion of the lungs and dyspnœa; it was cured by calomel and venesection; in four there was emphysema, without any other symptoms: they were cured. Two were very severe cases, accompanied with collapse, urgent dyspnœa, and extensive emphysema; both fatal, the one in three quarters of an hour, the other in twenty-four hours. Of the upper extremity fourteen cases; twelve males and two females: twelve cured, one relieved, and one fatal. Three were of the clavicle, and unimportant; one, however, was only relieved, as it was under treatment only a day. One of the scapula, which was cured by a roller round the chest. Nine of the humerus, of which three were of the surgical neck. Two were cured by means of side splints. The third case occurred in an exciseman aged fifty-five: the injury was exceedingly severe, delirium tremens set in with severe constitutional symptoms, ending in suppuration about the seat of the injury, and death. The inspection of the head of the bone displayed it completely smashed, with the joint divided. Five were of the middle of the shaft, and were cured by short side splints with the arm bent; but in one of these union was attempted to be obtained by a long straight splint from the shoulder to the hand, but which failed completely, and the usual mode was had recourse to. The remaining case was of the lower third, and uninteresting. One of the neck of the radius, in a boy aged fifteen, produced by the lathe of a machine: it was exceedingly distinct, and was cured by side splints. Of the lower extremity sixty-three cases; forty-eight males and fifteen females: fifty-five cured, two relieved, and six died. Twenty-three of the femur; of which three were of the neck, in persons aged seventy and seventy-eight, where the long outside straight splint was used in two, with benefit; in the third case death, from decay and exhaustion, took place. Two below the trochanters, produced by great violence, in males aged thirty-two and sixty-two, where, after the effusion of ecchymosis had subsided, the long outside straight splint was used, and a perfect cure obtained. One of the upper third of the thigh, in a boy aged eleven and a half, and cured by

the double-inclined plane. Sixteen were about the centre of the femur; of which six were in children under five years of age, and cured by pasteboard splints and bandage, and tied up in a pillow. Of the remaining ten, five were cured by the outside straight splint, and one by the double-inclined plane. One, a female aged eighty, only relieved, as she was taken away before union had occurred: and three males died, of the ages of twenty-five, thirty-seven, and forty-six; one from over exhaustion, after a severe attack of delirium tremens, one from complication of epileptic fits, and the third from absorbent inflammation, sloughing back, &c. One case of fracture of the inner condyle of the femur, in a male aged twenty-three, where side splints were used, and a cure effected. Six fractures of the patella, in males: all produced by direct violence, and cured by means of the long straight back splint. Six fractures of the tibia; one female and five males: all produced by direct force. Two were of the malleoli, and four of the lower third of the bone, and were all cured; one by pasteboard splints and starch bandage; two by the flexed position of the leg, with an outside splint; and three by the straight position, with a long outside straight splint as in fractures of the thigh. Nine fractures of the fibula; two females and seven males: all of the lower third; and in two, what is termed "Pott's fracture." They were all cured; three by pasteboard splints and bandages, two by inside splints, two by outside splints, and two by inside and outside splints.

Eighteen fractures of the tibia and fibula; thirteen males and five females: sixteen cured and two died. Ten were treated in the bent position, with the leg lying on an outside splint; and in the majority with the addition of an inside splint. Five in the straight position, of which, in four, it was maintained by the long outside straight splint, as in fractures of the thigh; and in one by a back splint, supported by two side splints. The remaining three were treated by placing them on the heel in a peg box, supported by sand bags. Of the two fatal cases, one was a female aged fifty-five, who had paralysis, incontinence of urine, and sloughing sacrum; the other a male, aged thirty-nine, of low powers, in whom there was no attempt at reparation, and who had

sloughing of the back. One fracture of the metatarsal bone, in a male; cured by a back splint with foot-piece.

Compound fractures comprise nineteen cases: of these, fourteen were of the upper extremity; of which one was of the humerus, in a female aged seventy, and complicated with a fractured radius, where side splints were applied, and a cure effected without a bad symptom. Two of the ulna, with simple fractures of the radius, in a male aged fourteen, and a female aged sixty-six: both were cured; the one being laid on a bent splint, the other treated with four side splints; the outer one of which being interrupted to allow of the application of the dressings. One of the bones of the forearm and hand, which was very severe, and required immediate amputation below the elbow: erysipelas followed, with protracted healing, but a cure resulted. Six of the fingers, all males; on five of whom amputation was performed, with success; but the sixth was saved, and cured by a splint and strapping. Four were of the thumb, of a very severe character: three were cured and the thumbs saved, although in one case it was nearly entirely detached; pasteboard splints, with warm-water dressing, being the treatment adopted. The other case, a seaman aged forty-five, had been done five days, and was admitted with severe inflammation of the hand and fore-arm, which ended in gangrene and death. Five compound fractures of the lower extremities; all males: four cured and one died. Two were of the tibia and fibula; the one a very severe railway case, which terminated in death soon after admission. The other occurred in a boy aged fifteen, where amputation was performed with perfect success. Two were of the tibia, in males aged fifty-four and sixty; slight, and cured by placing the limb in a peg box, and the application of side splints. One of the fibula, with extensive laceration of the soft parts, in a boy aged eleven, where the limb was laid on a pillow, and perfect union obtained. No splints were used.

Ununited fractures were four in number; in males between the ages of twenty-four and thirty-three. Two were of the humerus; of which one was of the surgical neck, the result of imperfect apposition of the bone at the time of the accident, nine weeks previously; cured by proper adjust-



ment and application of a starch bandage. The other was of eighteen months' standing, but unrelieved, after various remedies had been tried, ung. hydr., seton, mercurial alteratives, &c. Two were of the fibula, of four months' standing, and were cured by rest and the long outside splint.

Diseases of bone comprise twenty-five cases: thirteen cured, two relieved, six unrelieved, and four fatal.

Seven were of the spine; of which four were males and three females, between the ages of five and forty six. Of these two had lumbar abscess: the one died, the other left unrelieved. Two had psoas abscess, both opened: the one died, the other left unrelieved. One had dorsal abscess, which was opened, but no relief obtained. One was incipient, and was cured by means of a seton and rest; and one was more advanced, where relief was only afforded by a straight back-board. One had diseased sacrum, following parturition, with open abscesses in the groin: she died. Six cases of caries. One of the tarsal bones, in a female aged 62, where amputation was performed below the knee, with success. One of the tarsal bones, near the metatarsus, in a man aged thirty-three, where Chopart's operation was performed, with success; but the adherent flap became disunited from the action of the gastrocnemius, which was readily obviated by the division of the tendon Achillis. Three cases of caries of the phalanges of the fingers, which were removed successfully by amputation. One case of caries of the ungual phalanx of the thumb, cured by black wash. Three cases of necrosis; of which two were in females. Of these, one was of the malar bone, which was scarcely submitted to treatment; the other of the lower jaw, where a large part of the external plate came away, and the patient convalesced. The other cases occurred in males, and attacked the tibia, and were only relieved. Four cases of exfoliation; three males and one female: all cured. Two from the ends of stumps: one after compound fracture, and one from the back of the hand, without any apparent cause. One case of ostitis of the tibia, in a male aged thirty-three; improved by leeches, blisters, calomel, and colchicum. One case of periostitis of the sternal ends of the clavicles, in a female aged twenty-three, which

was considered to be syphilitic. Leeches, calomel, iodine, and sarsaparilla, were used with some relief. One case of hypertrophy of the middle of the left clavicle, in a tanner aged twenty-seven, supposed to be produced by muscular action. Blisters were applied, but he left, of his own accord, unrelieved.

The case of organic disease of the bone occurred in a male aged twenty-six, which proved fatal. It was that of an immense osteo-sarcomatous tumor, weighing twenty-two pounds, which sprung from the venter of the right ilium, and occupied the whole of the abdomen, producing œdema of the right lower extremity, and intense pain.

(I.) INJURIES AND DISEASES OF THE EYE AND APPENDAGES.

SUB-DIVISIONS.	Cured.		Relieved.		Un-relieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Injuries .....	3	..	..	1	..	1	..	..	..	..	6	2	8
Inflammation:													
Idiopathic and arthritic..	15	20	17	6	..	..	..	..	..	..	32	26	58
Syphilitic .....	4	2	..	..	..	..	..	..	..	..	4	2	6
Staphyloma .....	..	1	..	2	..	..	..	..	..	..	..	3	3
Amaurosis ..	..	..	2	2	2	1	..	..	..	..	4	3	7
Cataract .....	1	3	..	..	1	..	..	..	..	..	2	3	5
Malignant Disease .....	..	..	..	..	..	1	..	..	1	..	1	1	2
Paralysis of third nerve..	..	1	..	..	..	..	..	..	..	..	..	1	1
Strabismus .....	..	1	..	..	..	..	..	..	..	..	..	1	1
Diseases of the lids .....	1	2	..	..	..	..	..	..	..	..	1	2	3
Total Results of Males & Fem.	27	30	19	11	3	3	..	..	1	..	50	44	94
Total Results .....	57		30		6		..		1		94		
Per Centage .....	60·638		31·914		6·383		..		1·063		99·998		

Injuries and diseases of the eye comprise ninety-four cases, and are arranged precisely in the same manner as in the former Reports. These cases still maintain a low average of cured, being about sixty per cent., while those relieved are upwards of thirty-nine per cent.; and these circumstances are still owing to the same cause, which has been fully adverted to by Dr. Birkett in the Guy's Hospital Reports for October 1844, page 513.

Injuries include eight cases; six males and two females. One was only slight, and speedily cured by cupping and purgatives. One was a case of ruptured iris: in five there was wound of the cornea: in three, prolapsed and adherent iris: and in the other two, synechia anterior, with opacity of the cornea and lens. The treatment consisted in local depletion, fomentation, blisters, purgatives, and the application of belladonna round the eye. Four were cured, and one relieved. The other was a case of closed pupil, the consequence of an injury: an operation was proposed, but the patient declined to undergo it.

Under idiopathic and rheumatic inflammation are arranged the whole list of inflammatory diseases to which the eye is liable. They are, for the most part, chronic cases; but the following outline will explain them more definitely.

Nine cases of catarrhal ophthalmia, all chronic, and three combined with granular lids: of these, five were cured and four relieved. The treatment consisted of local depletion, blisters, saturnine, opium, and nitrate of silver, collyria; purgatives, alteratives, and tonics.

One case of purulent ophthalmia, in a female aged twenty, where sloughing of the cornea had ensued.

Fifteen cases of strumous catarrhal ophthalmia, between the ages of five and twenty-two. Of these, seven were males and eight females: eleven were cured and four relieved. In all, purgatives were first administered, then alteratives with tonics. In four, the opium collyrium was used; in two, the black wash; in three, the nitrate of silver; in four, blisters and the application of the tincture of iodine over the eyebrows, these being often varied; and in two, division of the tarsal cartilage was necessary. The average duration of the disease, before admission, varied from two weeks to several years.



Eight cases of chronic ophthalmia, with granular lids and vascular cornea: of which three were cured and five relieved. The treatment consisted of alteratives and tonics; and, locally, black wash, nitrate of silver collyrium, and occasional scarifications of the lids.

Five cases of rheumatic ophthalmia, in males between the ages of twenty-seven and fifty; of which one was cured and four relieved. Leeches, blisters, bark, colchicum, and alteratives, were the remedies had recourse to.

One case of sclerotitis, in a female aged eighteen, who was cured by leeches, blisters, Plummer's pill night and morning, evacuants, and afterwards tonics.

Ten cases of ulcers of the cornea; of which five were cured and five relieved. Six were complicated with opacities; two with hypopion, and two with a strumous vascular condition of the cornea. Blisters, collyria of black wash, opium, and nitrate of silver, alteratives, tonics, and support were administered. One case required the division of the tarsal cartilage, to relieve slight entropion.

One case of aquo-capsulitis, in a male aged nineteen, the result of a blow. It was complicated with iritis and false cataract: he was cured by blisters, cupping, alteratives, turpentine, and mucilage, and afterwards bark and support.

Two cases of common iritis, in males, of three weeks' standing: one was complicated with synechia. They were cured by calomel, opium, and alteratives, with bark and ammonia.

Six cases of arthritic iritis, in males between the ages of thirty-two and fifty-five; of which one was relieved and five cured, by means of local depletion, calomel and opium, colchicum, bark, iodine, and sarsaparilla, and repeated blisters.

There were six cases of syphilitic iritis; four males and two females: they were cured by means of local depletion, blisters, calomel, iodine, and sarsaparilla.

Seven cases of amaurosis; four males and three females: four were relieved, and three unrelieved. Blisters, electricity, alteratives, tonics, arsenic, &c., were the remedies used.

Staphyloma of the cornea occurred in three cases, females of the ages of eight, ten, and nineteen: one following small-

pox, and another purulent ophthalmia. They were all operated on; and in one instance with success; but in the others with relief only.

Five cases of cataract, both capsulo-lenticular; two males, aged thirty-one and sixty; in the one the operation for solution was performed, and the patient was cured; but in the other it was postponed till the summer. Three were females, one aged nine, where the needle was used twice, with success. Of the other two, aged thirty-two and fifty, one was a needle case, and the other a cataract in both eyes, which were operated on for extraction by the lower section, and with perfect success.

Two cases of malignant disease of the eye; one in a female aged sixty-two, who had a melanotic tumor of the eye-ball, with amaurosis, and several other similar tubercles were observed in different parts of the body: she left unrelieved. The second case occurred in a boy aged seven: the disease was true medullary cancer of the globe, which first appeared after fever, two years before: he died soon after admission, and the inspection states that there were small miliary grains in the lungs, liver, and kidney.

Three cases of disease of the eyelids; two females and one male, and all cured. Two were abscesses, which were opened; and one was ophthalmia tarsi, cured by quinine and roses, with opium collyrium.

One case of paralysis of the third nerve, with the pupils immoveably dilated, and paralysis of the left arm and leg: alteratives, blisters, nux vomica, and electricity were used, but with only relief.

The remaining case was one of congenital strabismus, in a girl aged seventeen, which was cured by the division of the internal rectus muscle on both sides.

#### (K) POISONS.

Of these, there are six cases, two males and four females: five were cured, and one died. The poison used in three cases was oxalic acid, taken intentionally; but the acid being diluted, and the remedies immediately applied, no bad effects resulted. In one case, however, a severe attack of bronchitis supervened. In one case sulphate of zinc was taken

excessive vomiting came on, but the patient speedily recovered. In one, a child aged two, dilute saturnine lotion; but without any bad effect. The remaining case occurred in a female aged forty-two, who took a teaspoonful of arsenic, which was soon followed by considerable vomiting, with pain and tenderness in the epigastrium: the hydratid sesquioxide of iron was immediately administered, and leeches applied to the pit of the stomach: diarrhœa supervened, and death resulted at the end of thirty-one hours. On inspection, the œsophageal end of the stomach was found injected, as also the greater curvature; the middle and lower thirds of the jejunum were deeper coloured than in the other parts; and the folds of the mucous membrane in the transverse and descending colon found stained of a dirty brown colour: patches of enlarged vessels were observed in the rectum.

TABLE OF OPERATIONS, WITH THEIR RESULTS,  
PERFORMED IN GUY'S HOSPITAL, FROM OCTOBER 1845 TO MARCH 1846.

OPERATIONS.	Cured.	Dead.	Not Noticed.	Unre- lieved.	Total.
Amputation .....	14	2	..	..	16
Excision of Tumors.....	19	..	..	..	19
Lithotomy.....	6	1	..	..	7
Lithotriety .....	1	..	..	..	1
Hernia .....	1	1	..	..	2
Excision of Head of Humerus ..	1	..	..	..	1
Tracheotomy .....	..	1	..	..	1
Castration .....	1	..	..	..	1
Miscellaneous.....	6	1	..	..	7
Total Results .....	49	6	..	..	55
Per Centage .....	89·09	10·9	..	..	99·99

Of the amputations, nine were of the thigh; of which four were for acute ankylosis of the knee-joint, and five for



extensive ulceration of the cartilages of the knee; two below the knee; one for strumous disease of the ankle, and one for simple dislocation of the astragalus. One case of Chopart's operation for diseased tarsus; one of the fore-arm, and one of the hand, for extensive injury; and two of the finger for carious disease of the bone.

Tumors removed were nineteen. Six of the breast, all malignant, one of which was open carcinoma. Seven steatomatous tumors; one from the back, one from the arm, two from the nates, one from the femoral region, one from behind the outer ankle, and one from the ball of the thumb. Two fibrous tumors, which resulted from old bursæ patellæ. Two malignant, one from the umbilicus, and one from behind the jaw. One melanotic, from the fore-arm; and one of enlarged nymphæ.

Lithotomy, seven cases; of which six were in boys, and one only of middle age.

Lithotrity was used in a man aged forty-one.

Hernia, two cases, both females, and already adverted to.

Excision of the head of the humerus performed in a man aged forty-six, for caries of the bone.

The case of tracheotomy was in a child who had drunk boiling water.

The castration was performed for true schirrhous disease of the testicle, and will come more especially under our notice in the next Report; as the case still remains under treatment.

The miscellaneous cases were the removal of the cicatrix after a burn; two cases of cancers of the lip; one chimney-sweeper's cancer; one case of nævus; one case of opening the urethra through the perinæum; and one case where dilatation of the urethra for the extraction of a stone in a female was performed, which has been already adverted to.

We have added, as usual, a Table of the "Accidents" admitted into the hospital; not that we desire to draw much attention to it, as it only represents the number of cases admitted into the wards, but takes no notice of the large number treated in the surgery; and therefore, as a statistical statement either of the doings of the hospital or of the injuries themselves, must be necessarily defective.

TABLE OF "ACCIDENTS," ADMITTED INTO GUY'S HOSPITAL  
FROM OCTOBER 1845 TO MARCH 1846 INCLUSIVE.

## Simple Fractures:

Base of the Skull.....	2
Inferior Maxilla.....	4
Scapula.....	2
Clavicle.....	3
Humerus.....	8
Olecranon.....	1
Radius.....	2
Radius and Ulna.....	1
Ribs.....	16
Pelvis.....	1
Femur.....	25
Patella.....	4
Tibia.....	13
Fibula.....	10
Tibia and Fibula.....	23
Ossa Calcium.....	1
Metatarsus.....	1
	116

## Compound Fractures:

Cranium.....	3
Radius and Ulna.....	1
Ulna.....	1
Thumb.....	3
Fingers.....	3
Femur.....	1
Tibia.....	1
Fibula.....	1
Tibia and Fibula.....	3
	17

## Dislocations:

Humerus.....	2
Elbow.....	3
Clavicle.....	3
Pelvis.....	1
Hip.....	2
Astragalus.....	1
	12

Scalds.....	12
Burns.....	36
	48

Injuries to Head.....	2
Eye.....	1
Back.....	8
Chest.....	3
Abdomen.....	5
Perinæum.....	1
Joints.....	29
Extremities.....	16
	65

## Wounds:

Incised.....	3
Punctured.....	3
Lacerated.....	8
Gun-shot.....	2
Scalp.....	19
Cut Throat.....	5
	40

Concussion of Brain.....	4
Spine.....	2
Apoplexy.....	2
Asphyxia.....	1
Hernia.....	10
Constipation.....	1
Retention of Urine.....	16
Foreign Body in Œsophagus.....	1
Poison.....	6
	43

	196
Fractures.....	133
Dislocations.....	12
	341

## REPORT OF THE CLINICAL SOCIETY,

FROM JANUARY 1845 TO MARCH 1846.

BY EDWARD BENTLEY, M.D., AND ALFRED POLAND.

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MEDICAL DIVISION, BY EDWARD BENTLEY, M.D.

THIS, our third Annual Report, embraces a period of fifteen months, and contains the results, with other points of interest, of 651 cases.

In these papers, as a general rule, we have advisedly abstained from noticing the economical disposition, if we may thus speak, of the Clinical Society. But circumstances have occurred since our last Report to excuse, if not to demand, some further remark on the present occasion.

Much attention has been directed of late to the education of students in practical Medicine and Surgery; and as an inducement, as well as a reward, dresserships have been allotted to such students as have distinguished themselves as reporters; and the encouragement thus afforded to the Society has been attended with happy results. A larger number of students have devoted themselves to this most essential branch of their studies, and the dressers, or house surgeons, have been selected from among men well-disciplined to undertake the responsible duties of the office. Another point of congratulation to the friends of the Society is the consent of Mr. Key to become the Surgical President; Dr. Barlow still presides over the Medical Department. The last subject to be noticed is, the adoption of an evening once in every three weeks for the relation of the most important cases in the house, on which occasions the Presidents take the Chair.

All these points tend to show the usefulness of the Society, and promise, perhaps at no distant period, to complete its incorporation with the School.

The following is the general Table of Results.



GENERAL TABLE OF RESULTS OF MEDICAL CASES.

	Cured.			Relieved.			Unrelieved.			Not Noticed.			Dead.			Total.		Per Cent.
	M.	F.	Per Cent.	M.	F.	Per Cent.	M.	F.	Per Cent.	M.	F.	Per Cent.	M.	F.	Per Cent.	M.	F.	
PRIMARY DIVISIONS.																		GENERAL TOTAL.
Diseases of the																		
A. Brain and Nervous System. . . . .	18	29	52.80	13	15	31.46	7	1	8.98	..	3	3.37	2	1	3.37	40	49	13.671
B. Lungs and Appendages . . . . .	34	13	35.6	26	8	25.75	8	1	6.81	1	2	2.27	30	9	29.54	99	33	20.276
C. Organs of Circulation . . . . .	5	13	23.68	17	12	38.15	1	1	2.63	1	4	6.57	15	7	28.93	39	37	11.674
D. Organs of Digestion . . . . .	17	12	38.68	12	10	29.33	2	6	10.66	1	..	1.33	6	9	20.	38	37	11.32
E. Integuments . . . . .	10	10	80.	2	3	20.	..	..	..	..	..	..	..	..	..	12	13	3.84
F. Urino-Genital System . . . . .	15	17	36.36	15	18	37.5	..	3	3.40	1	..	1.13	12	7	21.59	43	45	13.518
G. Fibrous Tis. (Voluntary Motion)	53	21	81.31	10	2	13.18	1	1	2.19	2	..	2.19	1	..	1.09	67	24	13.978
H. Eye . . . . .	..	1	50.	..	1	50.	..	..	..	..	..	..	..	..	..	..	2	0.307
I. Fevers . . . . .	34	24	87.87	1	..	1.51	..	..	..	1	..	1.51	2	4	9.09	38	28	10.138
K. Poisons . . . . .	4	1	71.42	1	1	28.57	..	..	..	..	..	..	..	..	..	5	2	1.075
Total Results of Males & Females	190	141	..	97	70	..	19	13	..	7	9	..	63	37	..	381	270	651
Total Results . . . . .	331			167			32			10			105			451		
Per Centage . . . . .	50.844			25.652			4.915			2.457			16.129			99.997		

(A.) DISEASES OF THE BRAIN AND NERVOUS SYSTEM.

SUB-DIVISIONS.	Cured.		Relieved.		Un-relieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Congestion & Inflammation:													
Brain.....	4	3	3	3	2	1	..	..	1	..	10	7	17
Spinal cord .....	..	..	1	..	..	..	..	..	..	..	1	..	1
Apoplexy and Paralysis..	5	2	6	..	3	..	..	1	1	..	15	3	18
Spasmodic diseases :													
Epilepsy .....	..	..	1	..	..	..	..	..	..	1	1	1	2
Chorea.....	3	11	..	2	1	..	..	..	..	..	4	13	17
Hysteria .....	..	5	..	5	..	..	..	2	..	..	..	12	12
Nervous Irritability.....	6	8	2	5	1	..	..	..	..	..	9	13	22
Total Results of Males & Fem.	18	29	13	15	7	1	..	3	2	1	40	49	89
Total Results.....	47		28		8		3		3		89		
Per Centage .....	52·808		31·46		8·988		3·37		3·37		99·996		

In our first division, under inflammation and congestion of the brain, are included a case of mania, of mild character, occurring in a female, of three months' standing, unattended by violence, exhibiting temporary derangement by sullenness and obstinacy, with imperfect performance of the catamenial function: it was cured by attention to the general health and quiet, after remaining in the hospital five weeks; a case of delirium tremens, in a printer, to whom brandy and opium were administered freely, and successfully; a case of fits, simulating epilepsy, brought on by masturbation: cured by purgatives, blisters behind the ears, and sulphate of zinc. Of the remaining cases, three were of the form where impairment of the speech and memory was met with, the patients becoming childish, and leaving the hospital unrelieved. The other cases exhibited the usual symptoms of cerebral affection. Under apoplexy and paralysis we find a case of hysterical hemiplegia, where there was probability of malingering and bad practices: it was cured. This case

will be found reported in the Medical Gazette. Also, a case of paraplegia, with disease of the third lumbar vertebræ, where masturbation had been practised. The application of ferrum candens removed the paralysis. A case of paralysis, much relieved by the administration of strychnine and secale cornutum. Under spasmodic diseases, we have two cases of epilepsy, both in females, one relieved, the other fatal; the first in a single woman, 24 years of age, induced by bad practices; the other in a widow, 32 years of age, who died during an attack four days after admission. Upon inspection, there was found softening of the brain, with tubercles.

We have seventeen cases of chorea; four in males, thirteen in females: the ages of the males were 8, 8½, 9, and 17; females, youngest 8½, eldest 20. In most of the cases, the sulphate of zinc, with aperient medicine, were the only remedies used. In one case the valerianate of zinc effected a cure, two were cured by iron, and one by the liq. potassæ arsenitis.

Twelve cases were traceable to fright; one to a blow on the head, from a fall; four recurred after rheumatism; and in two of these cases there was a systolic bruit.

(B.) DISEASES OF LUNGS AND APPENDAGES.

SUB-DIVISIONS.	Cured.		Relieved.		Unre- lieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Laryngitis .....	2	..	..	..	..	..	..	..	..	..	2	..	2
Larynx, tumor of .....	..	..	..	..	..	..	..	..	1	..	1	..	1
Bronchitis and Emphysema .	15	11	15	5	1	1	1	1	4	2	36	20	56
Pleuritis and Pneumonia ...	16	2	6	..	..	..	..	1	0	..	28	3	31
Phthisis .....	1	..	5	3	7	..	..	..	19	7	32	10	42
Total Results of Males & Fem.	34	13	26	8	8	1	1	2	30	9	99	33	132
Total Results .....	47		34		9		3		39		132		
Per Centage .....	35·606		25·757		6·818		2·272		29·545		99·998		

In the second division are 132 cases.

This table exemplifies the immense fatality of diseases of the lungs, and affords the most positive evidence of the



intractable nature of many of the diseases, more especially phthisis. Out of forty-two cases of patients thus afflicted, one only was cured, eight relieved, seven unrelieved, and twenty-six died: of these, thirty-two were males, and ten females. We have a case of tumor of the larynx; the patient a man of temperate habits, sixty-four years of age. For some months he had been very hoarse. Eight weeks prior to his admission he had a sudden fit of coughing, with intense dyspnœa: these paroxysms subsequently returned at intervals. Calomel had been freely administered internally; counter irritation externally, by means of croton oil and tartar emetic. His principal symptoms were urgent dyspnœa and inability to swallow fluids. Death took place three days after admission. The autopsy revealed a tumor, of a cancerous kind, about the size of a hen's egg, growing from the thyroid cartilage, and pressing upwards and forwards against the pharynx, allowing a very small opening for the passage of air into the lungs. The heart and lungs were healthy. Under pleuritis and pneumonia we have three cases of much interest. The first, in a man thirty-five years of age, of temperate habits, where, in addition to the pleuritis, there was considerable œdema of the left side of the face and neck, a sense of constriction about the chest, and excessive dyspnœa. There was found, after death, a large quantity of opaque turbid serum in the right pleural cavity: the left lung was bound down by old pleuritic adhesions: the pericardium contained fourteen ounces of a thick purple fluid: the heart was covered by a granular vascular layer, supposed to be of a fungoid character: the left vena innominata was found totally obliterated as to its cavity, being converted into a dense cord: the right vena innominata had slight recent obstruction: in the right jugular vein there was a coagulum, solid, but recent: vena azygos free. In the superior cava was a pedunculated growth, about two inches in length. There was also a remarkable appearance upon the surface of the small intestines, on which were chalky-looking bodies, of the size of mustard-seeds or less, presenting a beaded appearance, and found in the course of the lacteals. On examination they were found to contain chyle.

We meet with two cases of pleuritis, accompanied by effusion, where the operation of paracentesis thoracis was per-

formed. One terminated successfully, the other fatally. The first in the person of a man 42 years of age, a pot-boy, of intemperate habits. There was no displacement of the heart. He left the hospital six weeks after admission, and one month after the operation, cured. The next was that of a man 45 years of age, a gatekeeper at one of the parks. The operation was performed upon two different occasions: at the first operation thirty-two ounces of fluid were drawn off, and fifty-two ounces at the second. The removal of the fluid was attended with much relief to his symptoms. He died ten days after the second operation. No inspection was allowed. In both these cases, the only two we find recorded, the effusion was on the right side. In the first case there was no displacement of the heart; but in the second the heart was much displaced, and pushed over to the left side. Of the five cases recorded by Dr. Hughes, four occurred on the right side of the chest and one on the left.

## (C.) DISEASES OF THE ORGANS OF CIRCULATION.

SUB-DIVISIONS.	Cured.		Relieved.		Unre- lieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Heart and Pericardium ....	3	..	8	4	..	1	..	3	11	6	22	14	36
Aneurism .....	..	..	2	..	..	..	..	..	2	..	4	..	4
Veins:													
Inflammation .....	..	..	3	..	..	..	1	..	..	..	4	..	4
Capillaries:													
Anæmia and Chlorosis ...	1	0	2	7	..	..	..	1	..	..	3	17	20
Hæmorrhages:													
Purpura .....	1	1	..	1	..	..	..	..	..	..	1	2	3
Hæmoptysis .....	..	..	2	..	1	..	..	..	2	1	5	1	6
Hæmatemesis .....	..	2	..	..	..	..	..	..	..	..	2	..	2
Rectum .....	..	1	..	..	..	..	..	..	..	..	..	1	1
Total Results of Males & Fem.	5	13	17	12	1	1	1	4	15	7	39	37	76
Total Results .....	18		29		2		5		22		76		
Per Centage .....	23·684		38·157		2·631		6·578		28·934		99·984		

Under the division of the organs of circulation we find seventy-nine cases. Of these, eighteen were cured and twenty-nine relieved. The cases cured were functional diseases; and one case of purpura, which, although not perhaps legitimately following under this head, we have found it convenient to classify in this table.

Among the diseases of the heart and pericardium we find two cases of pericarditis, both fatal. In one there had been, for some months, bronchitis and anasarca after exposure to cold. Pericarditis supervened a fortnight before admission: great dyspnœa was present; and considerable obscurity as to the sounds heard. On necropsy, the ductus arteriosus was found open; and there were vegetations on the pulmonary artery. In another fatal case, occurring in a hard drinker, who had been subject to chest affection, and in whom a sudden attack of dyspnœa and palpitation had taken place, accompanied by difficult deglutition, a see-saw bruit was heard over the aortic valves. On examination, one aortic valve was found retroverted into the ventricle.

Of the four cases of aneurism, two were relieved and two were fatal. Of those reported relieved, it becomes a question whether they were really aneurism. The age of one was twenty-six; there was a rough murmur heard over the aorta; and much pain between the shoulders. The age of the other patient was forty-two; there was no murmur present, but the heart's sounds were prolonged. Both these patients had been much exposed to cold, and both had been the subjects of rheumatism.

Of the fatal cases, the first was that of a coalheaver. The patient was sixty-two years of age, had always enjoyed tolerable health, and had never had rheumatism; but had suffered from pain in the knee occasionally. Three months before his admission he got thoroughly soaked; after which he was troubled with dyspnœa, cough, and a sensation of striction at the mid-sternum. His principal symptoms when admitted were urgent dyspnœa, a sensation of tickling in the throat, pain in the head, with occasional vertigo, and lividity of the face and lips: he could not lie down in bed, from a sense of suffocation. Upon applying the stethoscope to the region of the heart, its action was found exceedingly laborious, and



somewhat tumultuous and heaving: rhythm regular. A very loud harsh murmur accompanied the first sound, most audible about one inch above the nipple, and a little to the inner side of the sternum: it was heard over the whole cardiac region, beneath the clavicles, and in the carotids; also posteriorly, about the middle of the base of the scapula. Pulse 120, small, hard, and jerking.

Upon inspection, eighteen hours after death, the heart was found of large size, and both sides were much distended. A very large dilatation of the aorta was found adhering to the fourth, fifth, and sixth vertebræ: the dilatation was in the centre of the space, and projected more into the left than the right pleura. The mitral valve was healthy; the aortic valves rigid and thickened; a spicula of bone was found adherent to one, another was very rigid, and the two adherent together.

The next case was that of a railway excavator, aged 43, who had been ailing some three or four years. The only marked symptoms in this case were a constant aching pain in the scrobiculus cordis, extending backwards to the spine, reaching from the sixth to the twelfth dorsal vertebræ, and dysphagia. The stethoscope revealed a slight bellows murmur with the first sound: pulse 60, small and weak. Whilst reading in bed he suddenly fell back and expired, six weeks after his admission. A large aneurismal sac was found in the descending aorta.

Under inflammation of veins we meet with a case of chronic phlebitis in one leg, where there was great swelling of the limb; and along the course of the saphenous vein nodules were felt. The case was much relieved by the use of the vapour-bath, and the application of leeches: the limb was afterwards bandaged. There was also admitted an interesting case of obstruction to the venous circulation of the upper half of the body. The head and neck appeared bloated and ready to burst; the lower half of the body was of the normal size and appearance. It was conjectured that some tumor was pressing upon the superior vena cava. The man left with but slight alteration.

Of the fourteen cases of chlorosis recorded, the residence is mentioned in eight; the districts being Poplar, Deptford, Dockhead, Bankside, Rotherhithe, and Bethnal Green. It

would be an interesting subject of inquiry, Has malaria any influence in producing this disease, and if so, what? For the districts above alluded to have long been considered as tainted with miasm.

We find one case of purpura reported as occurring in a little girl nine years of age, the exciting cause being the confined abode in which she had lived in Rosemary Lane, and the predisposing, her having suffered much from privations. At first she was treated with hydrochloric acid; afterwards the chlorate of potash with infusion of serpentary were administered. She left the hospital cured, three weeks after admission.

The cases of hæmoptysis were principally complications of phthisis.

In the case of hæmorrhage from the rectum, the Gallic acid, administered internally, was found a valuable and successful remedy.

## (D.) DISEASES OF THE ORGANS OF DIGESTION.

SUB-DIVISIONS.	Cured.		Relieved.		Un-relieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Mouth and Throat:													
Cynanche Tonsillaris . . . .	1	1	..	..	..	..	..	..	..	..	1	1	2
Cancrum Oris . . . . .	..	1	..	..	..	..	..	..	..	..	..	1	1
Stomach and Intestines:													
Dyspepsia . . . . .	3	6	5	4	..	1	1	..	..	..	9	11	20
Schirrous Pylorus . . . . .	..	..	..	..	..	..	..	..	1	..	1	..	1
Intestinal Obstruction . . .	1	..	..	1	..	..	..	..	..	1	1	2	3
Diarrhœa and Dysentery	5	..	..	..	..	..	..	..	1	3	6	3	9
Diseases of the Liver:													
Icterus . . . . .	5	2	1	..	..	..	..	..	1	1	7	3	10
Cirrhosis . . . . .	..	..	..	..	..	1	..	..	..	..	..	1	1
Tumor of . . . . .	..	..	..	..	..	1	..	..	..	..	..	1	1
Peritonitis . . . . .	1	1	1	1	..	..	..	..	..	1	2	3	5
Ascites . . . . .	..	..	..	1	..	1	..	..	1	3	1	5	6
Abdominal Tumors . . . . .	..	1	5	3	2	2	..	..	2	..	9	6	15
Hæmorrhoids . . . . .	1	..	..	..	..	..	..	..	..	..	1	..	1
Total Results of Males & Fem.	16	12	12	10	2	6	1	..	6	9	38	37	75
Total Results . . . . .	29		22		8		1		15		75		
Per Centage . . . . .	38·666		29·333		10·666		1·333		20·		99·998		

The above table comprises seventy-five cases, of which the following fifteen were fatal:

Schirrous pylorus . . . . .	1
Intestinal obstruction . . . . .	1
Dysentery . . . . .	4
Jaundice . . . . .	2
Peritonitis . . . . .	1
Ascites . . . . .	4
Abdominal tumors . . . . .	2
Total . . . . .	<u>15</u>



We find a case of *cancrum oris* reported. The patient, a little girl five years of age, was admitted July 20, 1846. A fortnight previously to her admission she had been attacked with pneumonia, for which she had taken small white powders (mercurial?). Upon the internal surface of the cheek, as far back as the last tooth, was a large sloughing ulcer involving the gums, with an excessively fetid grumous discharge from the mouth. Externally the left cheek was very hard, smooth, shining, and waxy; the tongue white and slimy; no pain was complained of; and the bowels acted regularly. Pure nitric acid was used as a local application, and chlorate of potash, with decoction of bark, was ordered internally, with the daily allowance,  $\mathfrak{z}$ iii of white wine, three eggs, and beef-tea. This plan of treatment was persevered in until the 9th of March, when the patient left the hospital convalescent.

We enumerate twenty cases of dyspepsia, and amongst them a case of phosphatic pyelitis, simulating schirrous pylorus. This case formed the subject of some remarks by Dr. Bird, at the Royal Medico-Chirurgical Society, the substance of which will be found reported in the Medical Gazette.

The fatal case of schirrous pylorus is one of some little interest, as there was but slight evidence of so fatal a disease during the life of the patient, who was an agricultural labourer fifty-three years of age, and had always enjoyed good health. He had been subject to palpitation of the heart and dyspnœa, increased upon exertion. A fortnight previously to his admission his legs became œdematous, but not his face: there was some little pain in the abdomen and liver, and the urine was natural, dark colour, and passed in small quantities. A systolic murmur was heard, loudest about two inches below and to the inside of the left nipple; less distinct in the course of the aorta; heard also in the epigastric region. A few days after his admission into the hospital he was seized with diarrhœa and sickness, and sank, after fourteen days, from exhaustion. Upon examination, the heart and kidneys were found tolerably healthy; the stomach was distended with fluid, and at its pyloric extremity a schirrous enlargement existed of about the size of an egg: the passage from the stomach to the duodenum was consequently constricted, but not to such an extent as to prevent the transmission of its contents.

In one of the four fatal cases of dysentery the rectum and colon were found extensively ulcerated. Within an inch or two of the external opening there were found two passages; one small, which had been formed by ulceration, and through which nearly all the fæcal matter passed, it being the shortest course (two portions of the rectum having adhered); the other, that portion of the intestine intervening between the adhesions, the normal passage, was found taking a curved course on one side.

X Of the four deaths from ascites, one was the result of fungoid disease of the vena cava. The patient, a carpenter by trade, forty-five years of age, and of temperate habits, eighteen months prior to his admission was seized with a dull weighty pain in the loins, which was relieved by flexing his loins. The pain was increasing, when, eleven months before his admission, on waking from sleep, he suddenly found his right leg and thigh swollen, shining, and hot; and in two days after the left lower extremity was similarly affected: he was cupped on the outer side, and leeches on the inner side of the thigh, and was under medical treatment thirteen weeks. The pain in the loins gradually declined, and in about five months entirely left him; the limbs also recovered themselves, and he returned to his employment. He went on well until two months before his admission, when he felt tightness at the scrobiculus cordis, with slight pain after taking food; the abdomen and lower extremities began at the same time to enlarge. He was a stout robust man, but of sallow complexion. The abdomen much enlarged, flatulent, fluctuating as the patient lay on his back: there was slight pain in the left iliac region, with tightness all over it; superficial veins of the abdomen much distended; liver felt enlarged, the sharp edge rounded and extending as low as the umbilicus; the legs and thighs were œdematous; urine was passed in small quantities and high coloured. He was put upon a diuretic plan of treatment, with small doses of mercury, which afforded him slight relief; but he died twenty-nine days after admission. Upon opening the abdomen, twenty-four hours after death, two gallons of serous fluid escaped. The omentum was granular; the liver much enlarged, with firm, vascular, fungoid tubercles, of moderate

size, scattered and running together: it was dark and mottled: the gall-bladder contained about thirty millet-seed calculi: the vena portæ, and its branches upwards and downwards, were thickened and contracted: pancreas large and hard: kidneys both very firm and granular: the right was half occupied by a red, soft, and bloody fungus; the right ureter was also fungoid; the inferior vena cava was filled with a fungoid mass, even to the entrance of the auricle: the vena azygos much enlarged. The chest and its contents were healthy.

In one case, a tumor, which, during life, had been felt in the right iliac fossa, was found after death to be adherent to the abdominal parietes. The external opening which had been made artificially, and through which pus had escaped, communicated with the interior of the intestines, the cœcum and ileo-cœcal valve being implicated. A mass of structure firmly adherent to the abdominal parietes was removed, and found, on being opened, to consist of a highly vascular cerebriform fungus with a little old cancerous disease beneath, including about the upper three inches of the cœcum, with the ileo-cœcal valve. A probe was passed from the external orifice, viz. where the tumor had been opened, into the interior of the bowel. The patient's age was fifty-three.

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(E.) DISEASES OF THE INTEGUMENTS.

SUB-DIVISIONS.	Cured.		Relieved.		Un-relieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Simple Inflammation.....	..	1	..	..	..	..	..	..	..	..	..	1	1
Eruptions.....	6	7	2	1	..	..	..	..	..	..	8	8	16
Specific Eruptions:													
Erysipelas.....	4	2	..	1	..	..	..	..	..	..	4	3	7
Lupus.....	..	..	..	1	..	..	..	..	..	..	..	1	1
Total Results of Males & Fem.	10	10	2	3	..	..	..	..	..	..	12	13	25
Total Results.....	20		5		..		..		..		25		
Per Centage.....	80.		20.		..		..		..		100.		



We have classed under simple eruptions, lepra, erythema, nodosum, eczema, herpes, and ichthyosis. We find none of sufficient importance to merit observation.

The balneum acidi picis, alluded to in the last Medical Report as a remedy for lepra, has been found efficacious in two cases of the disease included in the above table. It was also tried in a case of ichthyosis, and seemed at first to alleviate the disease, but subsequently failed. Pitch pills were afterwards administered; the patient left the hospital convalescent. We have learned, however, that the disease has since returned.

In the last year's Report, under (F) were classed diseases of the lymphatic system: on the present occasion no cases have been recorded by the Medical Reporters.

(G.) DISEASES OF THE URINO-GENITAL ORGANS.

SUB-DIVISIONS.	Cured.		Relieved.		Unre- lieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Albuminuria .....	9	2	13	3	..	1	1	..	0	4	32	10	42
Diabetes .....	..	..	..	1	..	..	..	..	3	..	3	1	4
Nephralgia .....	1	..	1	..	..	..	..	..	..	..	2	..	2
Nephritis .....	1	..	..	..	..	..	..	..	..	..	1	..	1
Hæmaturia .....	4	1	1	..	..	..	..	..	..	..	5	1	6
Fungoid Kidney .....	..	..	..	..	..	..	..	..	1	..	..	1	1
Paramenia .....	..	13	..	11	..	..	..	..	..	..	..	24	24
Disease of Uterus .....	..	..	..	3	..	..	..	..	1	..	..	4	4
of Ovaries .....	..	1	..	..	..	2	..	..	1	..	..	4	4
Total Results of Males & Fem.	15	17	15	18	..	3	1	..	12	7	43	45	88
Total Results .....	32		33		3		1		19		88		
Per Centage .....	36.363		37.5		3.409		1.136		21.59		99.998		

Of the forty-two cases of albuminuria, seven were consequent upon scarlatina, one consequent upon variola, nine traceable to wet and cold; in twenty-five, the exciting cause

was not elicited, the disease having made considerable progress before it attracted attention. Of the total number, eleven were cured and sixteen relieved. Of the twenty-seven cured and relieved, twenty-two were males. The general plan of treatment, by diaphoretics, with cupping at the loins and the occasional administration of the compound jalap powder, appears to have been attended with the most success. In the cases of complication with other disease, the treatment was modified. The principal complications were bronchitis and morbus cordis. In one case delirium tremens supervened. We have subjoined a table of some of the fatal cases.

DISEASE.	Age.	Duration of Illness previous to Admission.	Duration of Illness after Admission.
Albuminuria, anasarca, bronchitis, distressing vomiting.	38	5 weeks	7 weeks
Albuminuria, ascites, anasarca, bronchitis, prostration, delirium.	63	2 years	2 months
Albuminuria, anasarca, pericarditis, pneumonia, diarrhœa, delirium.	6½	3 weeks	9 days
Albuminuria, anasarca, bronchitis, vomiting, delirium. Necropsy: lungs filled with serous fluid; hypertrophied left ventricle; kidneys small, red, and very granular.	30	2 years	15 days
Albuminuria, ascites, bronchitis, drowsiness, dyspnœa, salivation, prostration. Necropsy: old peritonitis; pleuritis, with considerable effusion; recent pericarditis; concentric hypertrophy of left ventricle; kidneys small, of a pale red colour, unequally contracted; cortical structure full of deposit.	56	6 years	11 weeks
Albuminuria, anasarca, bronchitis, ascites, syncope. Necropsy: dilated bronchial tubes; kidneys small and granular.	47	3 months	6 weeks
Albuminuria, anasarca, delirium tremens, bronchitis, dyspnœa. Necropsy: lungs œdematous; œdema of glottis; pericardium containing four ounces of fluid; liver soft and pulpy; kidneys large, soft, and flabby, containing a large quantity of fat.	45	5 weeks	14 days

DISEASE.	Age.	Duration of Illness previous to Admission.	Duration of Illness after Admission.
Albuminuria, anasarca, mitral bruit, bronchitis, pleuritis. Necropsy : pleuritis with effusion ; pulmonary apoplexy ; hypertrophied left ventricle ; kidney small and granular.	33	18 months	14 days
Albuminuria, pleurodynia, prostration. Necropsy : abdomen only inspected : pus in the peritoneal cavity ; suppurating kidney.	40	3 months	11 days
Albuminuria, ascites, pleuritis, pericarditis. Necropsy : fluid in each pleural cavity ; old pneumonia ; pericardium slightly adherent ; left ventricle dilated and somewhat hypertrophied ; mitral ring considerably widened, both curtains imperfect ; kidney firm, coarse, and granular, deep red colour internally.	40	18 months	2 days
Albuminuria, ascites, bronchitis, prostration. No inspection.	19	3 months	3 weeks

Of the four cases of diabetes one only was relieved : it was treated by the sesq. carbonate of ammonia, Dover's powder, brandy, and animal food, according to the principle advanced by Dr. Barlow in a previous Number.\* When admitted, the patient was passing six pints of urine daily, sp. gr. 1036 : when he left, its quantity had decreased to two pints. He appears to have considered the exciting cause to have been mental depression. One of the fatal cases was examined. Phthisis had supervened ; recent pneumonia, numerous vomicæ and pneumothorax were found.

Five out of the six cases of hæmaturia were cured, and the other relieved. Four were directly referrible to injury in the loins from a blow or strain ; and the other two were attributed to cold. Two of the cases were much benefitted by the use of Gallic acid ; and in one the tinct. ferri. sesq. chlor. appears to have arrested the hæmorrhage.

It may be as well to mention that the case of ovarian dropsy reported as cured was a questionable case. The ages of the four patients were 23, 45, 55, 65. The age of the patient who died was fifty-five : she was a married woman ; had borne five children ; and menstruation had been absent twelve years, from which period she dated the commencement of the disease.

\* Vol. V. p. 282



from January 1845 to March 1846.

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(G<sup>1</sup>) DISEASES PECULIAR TO WOMEN.

SUB-DIVISIONS.	Cured.	Relieved.	Un- relieved.	Not Noticed.	Dead.	Total.
Hysteria.....	5	5	..	2	..	12
Chlorosis .....	8	15	..	..	..	13
Paramenia :						
Amenorrhœa.....	6	10	..	..	..	16
Dysmenorrhœa .....	2	..	..	..	..	2
Menorrhagia .....	3	1	..	..	..	4
Vicarious Menstruation...	1	..	..	..	..	1
Diseases of Uterus :						
Malignant ..	..	..	..	..	1	1
Non-Malignant.....	..	1	..	..	..	1
Ovarian Tumor.....	..	1	2	..	1	4
Total Results .....	25	23	2	2	2	54
Per Centage .....	46·296	42·592	3·703	3·703	3·703	99·997

(H) DISEASES OF THE BONE AND FIBROUS TISSUES.  
(VOLUNTARY MOTION.)

SUB-DIVISIONS.	Cured.		Relieved.		Unre- lieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Periostitis .....	..	..	..	..	..	1	..	..	..	..	..	1	1
Rheumatism :													
Simple .....	50	21	10	2	1	..	2	..	1	..	64	23	87
Venereal .....	3	..	..	..	..	..	..	..	..	..	3	..	3
Total Results of Males & Fem.	53	21	10	2	1	1	2	..	1	..	67	24	91
Total Results .....	74		12		2		2		1		91		
Per Centage .....	81·318		13·168		2·197		2·197		1·098		99·996		

The above table offers a satisfactory statement as to the treatment of rheumatism, a disease which, though shewing itself under many forms, and marked by many complications, is, nevertheless, amenable to remedies: and when we reflect how frequently the heart becomes affected as a sequence of the disorder, we may be excused for deeming the results satisfactory. The table gives, out of eighty-seven cases, but one death.

We subjoin the following analysis of the cases:

Acute rheumatism . . . . .	19
Chronic rheumatism . . . . .	68
Total . . . . .	<u>87</u>

The following were the complications of the cases of acute rheumatism:

Pericarditis . . . . .	in 9
Endocarditis . . . . .	2
Bronchitis . . . . .	1
Erysipelas . . . . .	1
	13
The remaining cases without complication,	6
Total . . . . .	<u>19</u>

Of the nineteen cases, eleven were males and eighteen females.

The cases were admitted in the following months; and, being classed under acute cases, were of few days' standing.

January . . . . .	7
February . . . . .	5
September . . . . .	1
October . . . . .	2
November . . . . .	3
December . . . . .	1
Total . . . . .	<u>19</u>

There is one case of sufficient interest to deserve notice. The patient, aged fifty, was admitted on November 6th, with acute rheumatism and bronchitis. On the 7th, pleuritis and pneumonia supervened. In December, there was great emaciation and pectoriloquy; cavernous breathing and gurgling

were detected at the apices of both lungs. She continued to improve until January, when the whole of the phthisical signs had disappeared. She left the hospital on the 11th of March, convalescent. On examining the chest at this time it was found naturally resonant.

Out of the sixty-eight cases of chronic rheumatism—

There were complicated with heart disease,	13
gout . . . . .	2
	<hr/>
	15
Without complication . . . . .	53
	<hr/>
Total . . . . .	68
	<hr/>

Of the heart complication, in six cases there was a systolic, and in three a diastolic murmur; and three cases were accompanied by a pericardial frottement.

Of the total number of chronic cases—sixty-eight—

There occurred in Males . . . . .	48
Females . . . . .	20
	<hr/>
Total . . . . .	68
	<hr/>

We have subjoined a table shewing the months in which the patients were admitted:

January . . . . .	21
February . . . . .	9
March . . . . .	7
April . . . . .	7
May . . . . .	6
June . . . . .	1
July . . . . .	1
October . . . . .	3
November . . . . .	5
December . . . . .	8
	<hr/>
Total . . . . .	68
	<hr/>

#### (I.) DISEASES OF THE EYE.

Our Report includes only two cases of ophthalmic disease, the remaining cases being inserted in the Surgical Report. The first is a case of syphilitic iritis, accompanied by syphilitic eruption over the whole body, in a young woman twenty-nine years of age, who left the hospital convalescent. The second, a case of staphyloma with bronchitis, relieved.



## (K.) FEVERS.

SUB-DIVISIONS.	Cured.		Relieved.		Unre- lieved.		Not Noticed.		Dead.		Total.		GENERAL TOTAL.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Intermittent.....	3	6	..	..	..	..	..	..	1	..	4	5	9
Infantile Remittent .....	1	5	..	..	..	..	..	..	..	1	1	7	8
Continued :													
Maculated .....	1	..	..	..	..	..	..	..	..	..	1	..	1
Non-maculated .....	27	11	..	..	..	..	1	..	1	8	29	14	43
Scarlatina .....	..	2	1	..	..	..	..	..	..	..	1	2	3
Variola.....	2	..	..	..	..	..	..	..	..	..	2	..	2
Total Results of Males & Fem.	34	24	1	..	..	..	1	..	2	4	38	28	66
Total Results.....	58		1		..		1		6		66		
Per Centage .....	87·878		1·515		..		1·515		9·09		99·098		

We now arrive at the important table, viz. Fevers. Of the nine cases of intermittent fever, four were tertian, two were quartan, three were quotidian. The residences of the patients suffering from the tertian type were, two at Bank-side, and two in the Kent Road; those suffering from the quartan type, both at Deptford; those from quotidian, two at Herne Bay, and one not mentioned.

We insert forty-one cases of non-maculated fever. Of these there were admitted in

January . . . . .	8
February . . . . .	3
March . . . . .	4
April . . . . .	1
June . . . . .	1
July . . . . .	6
October . . . . .	5
November . . . . .	7
December . . . . .	6
Total . . . . .	41

Of the forty-one cases, there were the following complications in thirteen :

Fever with bronchitis . . . . .	3
Fever with pneumonia . . . . .	1
Fever with chronic rheumatism . . . .	1
Fever with amenorrhœa . . . . .	1
Fever with abscess in axilla . . . . .	1
Fever with cerebral affection . . . . .	4
Fever with hydrops articuli . . . . .	1
Fever with erysipelas . . . . .	1
Total . . . . .	<u>13</u>

In two of the four fatal cases of the non-maculated fever the following lesions were found upon inspection. In one the fever was complicated with pneumonia, the patient's age being thirty-eight. After death were found recent pleuritic adhesions, right lung hepatized, left lung œdematous, hydatid cyst in the left lobe of the liver, brain slightly congested. In the other, the sternum was found extensively ulcerated, the ulcers ranging in size from a shilling to a half-crown piece; brain healthy. There was nothing worthy of observation in the third case of scarlatina. One of the cases of variola reported occurred after vaccination.

Under (L) are classed poisons. We have very few cases recorded. This is accounted for by the fact, that all cases of poisoning are admitted as casualties, and fall under the care of the surgeon. Those we had to deal with arose from the effects of lead introduced into the system. In all the cases the patients had been much exposed to its noxious influences. In two the poison manifested itself by producing colic, and in two paralysis of the wrists. In all the cases the blue line on the gums was a prominent feature. The treatment adopted in the two cases of colic was, in the first place, calomel and opium, followed by castor-oil; afterwards, mild aperients and tonics. In both the treatment was effectual. One of the cases of paralysis was complicated with albuminuria. The patient had had colic five or six times previously, but had never before had dropped hand. He was a man twenty-nine years of age, of irregular habits, and addicted to drinking. Blisters were applied to the wrists, and electrical sparks drawn

down the spine and arms. The patient left the hospital improved.

In the remaining case the patient had been the subject of paralysis five or six times, and had had dropped hand. He appears to have recovered under the use of active aperient medicine.

It occurs to us in this place to suggest whether some prophylactic treatment might not be adopted, so that, in some measure at least, the effect of the poison might be averted. There is no doubt but that all persons engaged in the preparation of white lead, or in any manner exposed to its operation, suffer materially in their health; and we think that employers, as well as labourers, would gladly avail themselves of any method which might be pointed out to improve their sanitary condition.

We have heard it related that the proprietors of one large colour house are in the habit of administering sulphur to their workmen, and that since they have adopted this treatment no case of colic has occurred.

In bringing our remarks to a conclusion, we have to claim the indulgence of our readers for the imperfect manner in which we have performed our task. We have endeavoured, from the materials supplied to us, to lay before the profession the result of nearly 700 cases. We have taken great pains and experienced much difficulty in classifying and arranging them; and whenever any case of particular interest has occurred, we have directed special attention to it. Although no one can be more fully sensible of the deficiencies in this Report, we venture to hope that our labour may not prove unprofitable, and that our readers will admit that we have added our mite to the general stock of useful medical knowledge.



## CLINICAL REPORT OF CASES

ADMITTED INTO PETERSHAM WARD,

FROM JUNE 1845 TO JUNE 1846.

BY JOHN C. W. LEVER, M.D.

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BETWEEN June 1845 and June 1846 sixty-nine females have been received into Petersham Ward under my care.

The ward-books record seventy-four cases; but one woman was admitted three times, and three women twice in the twelve months.

The following pages are collated from the Reports of the pupils who have filled the office of Clinical Clerk.\* This appointment is held for a period of two months, and enables the student not only to examine the cases in the ward which are entrusted to his superintendence, but he has also the privilege of performing the necessary minor operations upon the out-patients, who attend weekly, and, in number, amount to between 100 and 200.

All the recorded cases have furnished matter for clinical instruction to the obstetric pupils, who have attended me in my daily visits, and several have been made the subject of Clinical Lectures during the past session.

As far as possible I have studied brevity in the following Report, and have appended remarks only where such seemed absolutely needed for the elucidation of the case.

For the microscopic examinations and reports I am indebted to the acknowledged accuracy of Dr. Gull.

The following table shews the diseases under which the patients laboured, with the results.

\* I am happy to have the opportunity of acknowledging the assiduity and zeal of Messrs. L. Marsh, Jabez Ramskill, Kent, Drs. Oldfield and Peskett, and Mr. Metcalfe Johnson, who in rotation have filled the office of Clinical Clerk, with advantage to the patients, and to my entire satisfaction.

DISEASE.	Cured.	Relieved	Left the Hospital.	Died.	Dismissed for Irregularity.	Under Treatment.	TOTAL.
Amenorrhœa .....	..	..	1	..	..	..	1
Anæmia .....	..	1	..	..	..	..	1
Chlorosis, with Amenorrhœa	2	..	..	..	..	..	2
Fistula, Urethro-Vaginal...	1	..	..	..	..	..	1
Vesico-Vaginal ....	..	..	1	..	..	1	2
Hyper-Lactation .....	1	..	1	..	..	..	2
Hysteria .....	..	..	1	..	..	..	1
Labium, Abscess of .....	1	..	..	..	..	..	1
Menorrhagia .....	1	..	..	..	..	..	1
Menstruation, scanty, with							
Leucorrhœa .....	1	..	..	..	..	..	1
Ovarium, Dropsy of .....	..	1	..	2	..	..	3
Tumor of .....	..	1	..	..	..	..	1
Pelvis, Abscess of .....	2	..	..	..	..	..	2
Inflammation of ....	1	..	..	..	..	..	1
Polypus, Fibrous .....	2	..	..	..	..	..	2
Malignant .....	..	3	..	..	..	..	3
Vesicular .....	3	..	..	..	..	..	3
Urethra, Vascular Tumor of..	1	..	..	..	1	..	2
Uterus, Chronic Inflam. of ..	3	..	..	..	..	..	3
Congestion of .....	2	..	1	..	..	1	4
Corroding Ulcer of ..	..	..	..	..	..	1	1
Fibrous Tumor of ..	..	4	..	1	..	..	5
Fungoid Disease of ..	..	6	..	..	..	..	6
Hypertrophy of ....	..	1	..	..	..	..	1
Induration of .....	3	1	..	..	..	..	4
Procidentia of .....	1	..	..	..	..	..	1
Prolapsus of .....	2	..	..	..	..	..	2
Retroversion of ....	1	..	..	..	..	..	1
Scirrhus .....	..	3	..	..	..	..	3
Ulceration of .....	3	1	..	..	..	1	5
Vagina, Aphthous Inflam. of	..	..	..	..	..	1	1
Imperfect .....	..	..	1	..	..	..	1
Stricture of .....	1	..	..	..	..	..	1
Total .....	32	22	0	3	1	5	63

*Amenorrhœa.*—This patient (who suddenly left the hospital before presentation) was single, and 26 years of age. Menstruation commenced early in life, and had always been scanty, irregular, and accompanied with violent pain in the back and legs, but had been altogether absent for upwards of a month previous to her admission. When 14 years old, she had a severe and protracted attack of acute rheumatism with pericarditis; to relieve which, bleeding from the arm, cupping, leeches, &c. were prescribed. After this illness she always suffered from palpitation, accompanied with pain in the region of the heart on the slightest exertion. At the age of 22 she was admitted into a public hospital, where, during a protracted residence, she was treated with frequently-repeated local depletion, blisters, setons, issues, &c. On her admission, her pulse was 140, rapid, small, and irregular; a loud murmur was heard on the first stroke of the heart, and a sharp stroke on the second; the breathing was hurried; tongue white; abdomen tense, but resonant on percussion; bowels torpid. These symptoms were in a slight degree moderated by treatment, consisting of purgatives, antispasmodics, and sedatives, carefully exhibited during four weeks; but at the expiration of this period she was suddenly seized with extreme dyspnœa, accompanied with great pain in the cardiac region, and the murmur became louder: cupping, followed by a blister, was ordered, with calomel, antimony, and opium, every three hours; but little relief was experienced, until the gums were affected, and in proportion as the mercury shewed its influence on the system, so did the improvement in the symptoms take place. She now took tinct. hyoscy. m xxx. acid. hydrocyanici dil. m iii. mist. camph. ℥iii. every four hours with considerable benefit. Her pains were lessened; her pulse sank to 80, was regular, of moderate size, and firm; the harsh murmur on the first stroke of the heart persisted, and was heard most distinctly about the left nipple, but clearer along the spine as far as the lumbar region; the bowels maintained their torpid state, requiring full and repeated doses of purgative medicine to produce an evacuation. The catamenia did not return; but as there were darkened areolæ, full and plump mammæ, with occasional morning sickness, her previous medical



attendant, as well as herself, entertained a suspicion of pregnancy. The urine was examined, but no kiestine was obtained: its sp. gr. was 1025; it was acid, and emitted an odour similar to peppermint. On the 30th of May she was permitted, according to her own wish, to go into the country; and on the 2d of July she returned, improved in health and appearance, but there had been no return of the catamenia.

*Anæmia.*—This woman, who had menstruated regularly, but painfully, from the age of 14, married at 31; and in the course of fifteen months was delivered of a still-born child, at the full period. In about eleven months, after a natural labour, from which she rapidly recovered, she gave birth to a second child, alive, which she nursed for a very long period. In August 1845 she miscarried, in the third month, when she lost a very large quantity of blood, both before and after the expulsion of the ovum. To this miscarriage she attributed those symptoms of weakness for which she was admitted into the hospital. On the 2d of March 1846 she was again delivered of a living child, and lost but little blood either before or after her confinement; but her symptoms of debility were much increased, and continued until she became a patient of Guy's Hospital. On admission, her symptoms were, pain, weight, and noise in the head; the eyes were sunken, and surrounded with dark areolæ; the pupils large; the conjunctivæ pearly, and raised by effused serum; the tongue pallid, and indented. Loud murmurs could be heard over the jugulars; the respiration was hurried; the heart's action irritable, and accompanied with a loud anæmic murmur; the pulse sharp, quick, and jerking; the abdomen rather tympanitic; no dulness on percussion, nor hardness nor tenderness, over the region of the liver; but she winced when firm pressure was made over the spleen. The urine was pale, of moderate quantity, acid, and gave no traces of albumen: the bowels torpid. She had frequent attacks of globus; the uterus was large and flabby; the vagina lax, and bathed with leucorrhœal discharge; the skin pale, sallow, and silky; and the lips blanched. On her admission she was ordered ferri ammonio-tart. gr. v. thrice a-day in inf. calumbæ, with an occasional purgative, meat diet, and porter.

This treatment was continued, with benefit, for twelve days; when she was attacked with the symptoms of tertian intermittent, and was relieved by quinine. About a week after this, she was seized with distressing tenesmic diarrhœa, for which opiates, astringents, and aromatics, with starch and opium enemata, were exhibited. In a short time she again resumed the iron, and was gradually improving under its employment, when, having the offer of spending a few weeks in the country, she left the hospital, with directions to continue her medicine.

*Chlorosis with Amenorrhœa.*—Two cases of this complication have been admitted. The one, a servant-girl, 19 years of age, in whom menstruation commenced at the age of 14, and was regularly performed for three years and a half. The catamenia then became irregular and scanty, and for ten weeks previously to her admission had entirely disappeared. On admission she presented the usual appearances, and described the symptoms that accompany chlorosis. The chest was not well developed; the respiratory sounds natural, but she was subject to a slight hacking cough; the pulse was slow and feeble; and the systolic sound of the heart occasionally prolonged, and accompanied with a soft murmur. She was ordered, on admission, *mist. ferri comp. ʒi. dec. aloës comp. ʒi.* thrice a-day; and this treatment was continued for a month, with a marked improvement in her appearance, and diminution of all her symptoms. At the end of this time the catamenia re-appeared, preceded by considerable pain in the loins. Her recovery was retarded by two attacks of cynanche tonsillaris, both of which were removed by the application of a blister, and the exhibition of full doses of the *pulv. guaiaci*, which acted freely both on the skin and kidneys. The second case was that of a servant, aged 21, who, until the age of 18, when menstruation commenced, had enjoyed good health. About fifteen months before her admission she was under my care for chlorotic symptoms, which yielded to the usual treatment. For some months the catamenial discharge had become paler, and diminished in quantity, and the symptoms of anæmia gradually increased, until, no longer able to keep her situation, she applied for admission into the hospital. Her face was of a dark sallow colour; the eyes, with dilated

pupils, were encircled with large areolæ, the prolabia and conjunctivæ white; the pulse regular, small, and quick; the tongue flabby, pale, and indented at the edges; the appetite deficient; bowels regular. She had pain under the left nipple, with shortness of breath, and occasional palpitation. She took *mist. ferri comp. ʒi.* with *dec. aloës comp. ʒi.*, until she had lost all her symptoms, and her countenance had regained the appearance of health: still, notwithstanding she took daily exercise, and busied herself with attending to the other patients, menstruation did not return, until electricity was employed; a slight shock being passed through the pelvis every third day. This was followed by a flow of the catamenia, in full quantity, and of good colour. She left the hospital, and is now satisfactorily filling the office of a domestic servant.

*Fistula, Urethro-Vaginal.*—The subject of this distressing malady was an unmarried woman, who, at the age of 22 (ten years since), was delivered of a still-born male child, after (to use her own words) “being in labour for three weeks,” when at length delivery was completed by instruments. A serious and protracted illness followed her delivery; and on recovery, she found herself totally unable to retain her urine. The symptoms continued up to the period of her admission; although the incontinence of urine was influenced by position; for while recumbent she could hold her water for some time, but if she assumed the erect posture it immediately gushed forth. Her health was tolerably good, although not very robust. Vaginal examination found the uterus bound to the posterior and left side of the vagina, by a firm band or cicatrix: the viscus was healthy, and free from tenderness. A catheter introduced into the bladder abstracted ʒiv. of pale limpid urine. The first and second examinations, which were made by passing the finger along the roof of the vagina while the catheter was in the urethra, and by using the bivalved speculum with the patient on her knees and elbows, failed to detect the fistulous opening. Subsequently, the Clinical Clerk, Mr. Ramskill, detected a small opening in the roof of the vagina, about half an inch on the right side of the urethra. Through this he passed a probe to the neck of the bladder, where it came in contact with the catheter passed through the urethra. An elastic catheter was ordered to be kept constantly in the



bladder, and the nitrate of silver to be passed along the track of the sinus. This was repeated three times, when all the urine flowed by the catheter; and for three days after the removal of the instrument she passed the urine naturally, but on the fourth dribbling returned. The catheter was again introduced, and the argenti nitras applied, by means of a thin silver probe coated with the caustic by fusion. This was repeated every third morning; and although the size of the fistula diminished, and, while the catheter remained in the bladder, all the urine passed through the tube; yet when this was withdrawn the dribbling returned. It was now deemed prudent to apply the actual cautery. This caused much pain, and was followed by some faintness. No examination was made until five days had elapsed, when the opening was found to be smaller and more contracted, and the quantity of urine flowing through it was reduced in quantity. The ferrum candens was applied a second time, and with increased benefit; and although the opening had not entirely closed when she left the hospital, yet it was small. A report, sent me a few weeks after, informed me that all the urine at that time flowed through the natural channel; and she had been able to take the situation of housekeeper.

Two cases of *vesico-vaginal fistula* were admitted.—The first was that of a woman 34 years of age, married twelve months, and delivered ten weeks previously to her admission: her labour lasting from Tuesday to Friday night. On the afternoon of Friday the head was delivered, by the surgeon in attendance, with the forceps; but the shoulders, and the rest of the body, were not abstracted until three hours and a half, when the blunt hook was employed. At first there was inability to empty the bladder: this lasted for a few days, and was followed by incontinence. On examination, an opening, just large enough to admit the female catheter, was detected about one inch behind the meatus. An elastic catheter was kept in the bladder, and the arg. nit. applied to the edges of the fistula from time to time, with the effect of diminishing its size: but the patient, having committed some serious irregularity, was dismissed the hospital.

The second case is still under treatment. The woman is 30 years of age. She was married at 22, and it was nearly

eight years before she became pregnant. Her labour was protracted, lasting from Saturday evening until Tuesday night. A Practitioner residing in her neighbourhood had been in irregular attendance until the evening of Tuesday, when Mr. Lund was sent from the Lying-in Charity of Guy's Hospital. He found the head arrested at the outlet and the brim presenting. The woman was restless; her pains feeble; and there was hiccough, with tenderness over the region of the uterus. After abstracting about two pints of urine, he desired my attendance. Finding the embryospastic instruments useless, I perforated the left frontal bone, and completed the delivery. For two days the bladder was emptied by the catheter; she then passed her urine without assistance, and continued to do so naturally for seven or eight days; but after this time it flowed involuntarily. On examination, an opening, admitting the tip of the finger, was found in the urethra, nearly two inches from the os externum. After the patient's health had been improved by general treatment, the actual cautery was applied; and this has been repeated three times, and, on each occasion, with benefit.

*Hyper-Lactation.*—Two cases of undue lactation were admitted. One woman was 33 years of age, who had married at 21 years, and had given birth to eight children; the last, three months before her admission into the hospital. From girlhood she had been subject to headache, accompanied with swimming and noise in the head; but after her marriage these increased, and particularly so after her confinements, and during lactation. Menstruation continued regularly during the period of her nursing; and between the periods there was a constant leucorrhœal discharge. On January 14th she was ordered,

Sp. Ammon. Fœtid. ʒfs. Tinct. Lupuli ʒfs. Tinct. Cinch.  
Comp. ʒi. ex Infus. Calumbæ, ter quotidie.  
Ext. Hyosey. Camph. āā gr. v. omni nocte.

These she continued until the 31st, with considerable benefit; when the following draught was prescribed:

Quin. Disulph. gr. ii. Tinct. Lupuli ʒfs. Inf. Rosæ Comp. ʒxifs.  
ter die sum.

And she was ordered, dec. quercus c̄ alum. as an injection.

These she continued for three weeks, when she was presented well.

The second case was that of a young woman 23 years of age, of melancholic temperament. She was married at the age of 20. Menstruation began at the age of 13; and, from this period until her marriage, recurred every three weeks, and in large quantity. She had not menstruated after her marriage. She had given birth to two children, the last being five months old, and had once miscarried. On her admission she complained of pain and weight in the head, accompanied with noise in the ears. The face was pale; the prolabia and conjunctivæ bloodless; the pupils dilated; the tongue clean, broad, flabby, and indented; respiration hurried; the heart's action quick; the pulse small, rapid, and compressible; pain in the left side under the mammæ; sleep disturbed by frightful dreams; spirits depressed, &c. She stated that since her marriage she had been subject to occasional fits, commencing with pain in the right arm, and extending to the extremities of the fingers: the eyes then became dim, and the right eye painful; and vertigo, with total loss of consciousness, followed for the space of fifteen or twenty minutes. Friction of the arm and hand at the commencement of the attack sometimes arrested it. At first she was prescribed mag. sulph. ʒi. thrice a-day ex infus. valerianæ; and the child was ordered to be weaned. After three days' residence in the ward she had a fit, but of a slighter character than usual.

Enema Assafoetida hæc nocte injiciend.

Ferri Sulph. gr. i. Pulv. Digit. gr. i. Pil. Aloës c̄ Myrrhâ,  
gr. ii. in formâ pil. ter quotidie sum.

Balneum pluviale ter in hebdomadâ.

These she continued for twelve days, and was in every respect improved, but left the hospital before her recovery was complete.

*Hysteria*.—This patient's case furnished many points of interest: she was 21 years of age, and had been a domestic servant. The catamenia first appeared when she was 19, and had continued to recur regularly. She asserted that, in May 1845, being seduced by a policeman, she in consequence



became pregnant. The first connection took place a week after the appearance of the catamenia; and when the period came round she was sick, and the sickness continued for three months. Her history, as described by herself, is remarkable. She stated that, on Jan. 12, 1846, she left home with her paramour, and, with him, walked into the fields: he gave her some fluid to drink, which, in three quarters of an hour, brought on pain, commencing in the loins, and coming round the abdomen. This occurred in paroxysms; and for an hour and a half she continued to walk, until the pain became so violent that she was compelled to lie down under a hedge, when the man directed her to lie on her left side, and, stretching her legs violently apart, after a time he delivered her: she now became insensible, but could not say how long the insensibility lasted. When her consciousness returned she found a pool of blood about her person, and her private parts very much lacerated. She walked home, and, ten days after, was seen by a surgeon. This girl had been seen by several medical men, and the charge against the policeman had undergone a lengthened investigation by the police magistrate, by whom it was dismissed. On examination, there were no external or internal signs of delivery. During her residence in the hospital she had several severe attacks of hysteria; the bowels were very obstinate, never acting without the employment of purgatives; and she complained of inability to pass her urine, although the bladder on no occasion was distended. Menstruation took place regularly, and in full quantity; her appetite was tolerably good; and her countenance bore the appearance of health. Purgatives were daily exhibited; and the shower-bath employed every other morning; but after a time, becoming weary of the discipline of the hospital, she was removed by her mother.

*Labium, Abscess of.*—S. J——, aged 35, had been married thirteen years, but without children: the catamenia had returned every third week, and lasted seven days. About nine or ten weeks previously to her admission she discovered a swelling in the left labium, about the size of a nut: this gradually increased in size, until it became as large as a walnut, and was attended with a dull throbbing pain, with

distinct fluctuation. The swelling was opened, and a quantity of greenish-yellow fœtid pus evacuated, when it rapidly healed.

*Menorrhagia.*—E. M——, aged 21, a pale exsanguine woman, with brown hair and pearly eye, was admitted Oct. 15th. Had been married three years, and had had one child: her labour had been good, but lingering. Her catamenia first appeared at the age of 15, and recurred regularly up to the time of her pregnancy. Her child died at the age of seven months; and a month after this menstruation re-commenced, and, with the exception of an interval of a day or two, continued for three months. During this period a considerable quantity of coagula passed at various times. The discharge now ceased for a fortnight; at the end of which time (Tuesday 14th) it again returned, commencing, as before, with a discharge resembling menstrual secretion, and increasing in quantity, and altering in quality, until nothing appeared but pure, florid, red, or coagulated blood: it increased towards evening. She had some pain in the back, accompanied with a sense of weight and bearing down. Her respiration was quick, but normal: pulse small, quick, and feeble. She complained of weight at the top of her head, indistinctness of vision, and noise in the ears. Her bowels were usually regular. On examination, the vagina was soft and lax; the mouth of the womb was patulous; the cervix soft and spongy; and the whole of the viscus large, soft, and relaxed. She was ordered,

Quin. Disulph. gr. ii. Tinct. Hyoscy. m xx. Mag. Sulph. ʒfs.  
ter quotidie ex Inf. Rosæ C.

On the 18th the bleeding continued in the same quantities, and of a florid colour.

Acid. Gallici gr. viii. 6tis horis in formâ pulv. c̄ Pulv.  
Acaciæ ʒfs.

On the 20th the discharge was less: there was still some weight and pelvic uneasiness. The gallic acid was detected in the urine.

21st. The red discharge had entirely ceased, but there was still a colourless flow.

23d. No discharge, either colourless or red.

Tinct. Ferri Sesq. m xx. Tinct. Cinch. C. ʒi. ter. die ex Inf.  
Quassia.

26th. Was much stronger; appetite good; countenance improved: no discharge. Ordered to inject cold water into the vagina.

On the 28th, presented.

*Menstruation scanty, with Leucorrhœa.*—M. A. C——, aged 27, was a single woman, whose catamenia had appeared at the age of 13, painless, in full quantity and regular, until a year before her admission, when these became scanty and light coloured, although recurring at the proper time. This was attended with palpitation of the heart, and occasional numbness in the feet and legs, and a bearing-down pain in the lower part of the abdomen at the monthly periods. Three months before admission leucorrhœa commenced, profuse in the intervals of menstruation, and attended with a racking pain in the sacrum and thighs. Bowels confined; tongue tolerably clean; skin cool; pulse 96. Ordered,

Dec. Quercus  $\bar{c}$  Alum pro injec.

Mist. Ferri C.  $\bar{3}$ i. Dec. Aloës C.  $\bar{3}$ i. ter quotidie.

She continued this medicine; and on the next appearance of menstruation the discharge was greater in quantity, and of a florid red colour, and the leucorrhœa had ceased.

On July 7th she was presented: the numbness had left, and her countenance and health were much improved.

*Ovarium, Tumor of.*—A. C——, aged 32, of dark complexion, and apparently robust health, a native of the country. Began to menstruate at the age of 14; was always regular; and married at 21. She had had four children, and one miscarriage. Her last labour took place seventeen months previously to her admission, and was not remarkably difficult. Six weeks after her confinement she walked seven miles, with her baby in her arms; and shortly after was seized with severe pain in the lower part of the abdomen. This, after a time, left her, but subsequently recurred, at intervals of six or eight weeks. During this time she was suckling. Eight weeks before she came into the hospital she had a severe paroxysm of pain, and noticed a tumor in the hypogastric region. The pain was relieved by fomentations and stimulating liniments, but the tumor increased in size. She weaned her child just before she discovered the tumor. Her tongue



was flabby, and rather white; her appetite deficient; bowels regular. Menstruation had once occurred since the weaning. On examination, the tumor was found to be moveable, gravitating to the side on which the patient was made to lie: it caused no pain when firm pressure was made over it, and percussion elicited a dull sound. Her general health was attended to; her tongue became clean; her appetite good; and after continuing the mag. sulph.  $\text{ʒi}$ . thrice a day ex infus. gentianæ comp. for some days, she left the hospital, with directions to return if there were a recurrence of pain, or considerable increase in the size of the tumor.

*Ovarium, Dropsy of.*—The first case was that of M. H—, aged 44, admitted into Petersham Ward June 25th. She was married at the age of 30; and at the end of a twelvemonth, being three months advanced in pregnancy, she miscarried. Her catamenia first appeared between 19 and 20 years of age, and continued regular, and of full quantity, until she became pregnant; but after her miscarriage the discharge was very scanty, and was attended with much pain; and the intervals between the monthly periods were marked by considerable leucorrhœal discharge. She frequently suffered from pain in the head, but without any evidence of cardiac or hepatic derangement. She was a person of tolerably muscular frame, dark hair, and rather sallow complexion; had lived regularly, and enjoyed tolerable health up to the cessation of the catamenia, which had taken place suddenly eight months before, from which period she dated the commencement of her present symptoms. Having experienced, for about two months, a fluttering sensation in the left iliac region, she perceived a hard tumor, of the size of a small hen's egg. She now consulted Dr. Ashwell, who attended her up to the period of her admission into the hospital. Three months before, her left leg had begun to swell, and her abdomen became rapidly large, inducing difficulty of breathing, and interfering with the proper evacuation of the contents of the bladder. At the time of her admission her urine was passed in small quantity, and frequently; her bowels were relieved daily; the dejections were costive; her tongue clean, and moist; appetite tolerably good; pulse small and feeble. The abdomen was greatly distended, and on percussion gave a distinct sense of

fluctuation, especially in front, but not so distinct posteriorly. At the upper and left side a rounded, nodular, hard body could be felt. Around the epigastric region, between the eighth and ninth ribs, the abdomen measured thirty-five inches; around the umbilicus, forty-one and a half inches; and midway between the umbilicus and pubes, forty-two inches. Diuretics and tonics were prescribed, with the effect of increasing the quantity of urine. Some diminution of the measurement around the umbilicus ensued; but the difficulty of breathing increased, especially when the patient assumed the erect posture.

On July 10th she was ordered,

*Liq. Potassæ, ʒ fs. ter die ex Cerevisiâ.*

*July 20th.* Was compelled to remain in bed, owing to the great pressure occasioned by the tumor. Countenance pallid, and more anxious: secretions regular, and natural. The three measurements were, thirty-four inches, forty-one inches, and forty-three inches.

And these again, on August 18th, were, thirty-six inches, forty-three inches, and forty-two inches: her general health remained tolerably good.

Although anxious to gain relief by tapping, she was advised to go to her friends in the country, as her strength appeared to be declining, and she seemed to suffer much from the heat of the weather: therefore, on the 25th of August, she left the hospital.

On the 29th of October she was re-admitted, complaining of her breathing being much oppressed, especially on rising, or the slightest exertion. The abdomen was in form irregular: below the stomach there was a projecting cyst; and in the left hypogastric and umbilical region there was also a remarkable prominence. Measurements, forty-six and a half inches, forty-eight inches, and forty-six and a half inches.

On the 30th paracentesis was performed, and nineteen pints of thick, mucilaginous, glairy, brown-coloured fluid, intermingled with particles of fibrine, were withdrawn by an aperture formed midway between the umbilicus and pubes.

She was much relieved by the operation, and improved in appearance and strength, and left the hospital on December 2d.

In six weeks she applied for re-admission. The abdomen had continued to increase, but more especially during the preceding fortnight; the breathing was embarrassed; micturition difficult; urine scanty; legs œdematous; bowels regular. The tumor seemed to rise higher than before; skin of abdomen tense; fluctuation very distinct. Around the umbilicus she measured forty-nine inches. On the 24th paracentesis was a second time performed. Thirty-two and a half pints of thick greenish fluid were drawn off; but during the latter half of the operation the fluid presented a purplish hue. Small particles of fibrinous matter came away with the last quantity of fluid. She expressed herself greatly relieved by the operation, and regretted it had been delayed so long. A week after the evacuation of the fluid she suffered from tenderness, with flatulence and tension of the abdomen; but on the 7th of February these had disappeared. On external palpation, a hard firm cyst could be readily distinguished on the left side, as also some peritoneal ascites.

For two or three days before the 11th she had had several rigors; but on that day the pulse was feeble; there were increased tenderness and tension over the tumor; and, I thought, probably inflammation of the cyst. The wound made by the trocar was suppurating.

*Feb. 15th.* The rigors continued, though the abdominal tension was less.

22d. She was weaker, and appeared to be losing flesh; had frequent flushes; the tongue was clean; pulse weak, and quick; no rigors; less pain in the abdomen, which was rapidly increasing in size.

28th. Measured around the umbilicus fifty inches.

From this day until March 9th, when paracentesis was performed, she was most earnest in her entreaties to be tapped. Her breathing was oppressed; she was restless; and her legs were swollen: the measurement around the umbilicus was fifty-one inches. The fluid was of a coffee-ground colour, and of thick consistence, noiselessly flowing into the pail. After the cyst had been emptied, its solid part could be felt to float in the ascitic fluid: and, by partially withdrawing the trocar, that is, out of the cyst, this fluid was evacuated from the cavity of the peritoneum: it was thin, reddish,



made a noise and frothed while falling into the vessel. The quantity of fluid drawn from the cyst was twenty-six pints, and from the peritoneal cavity sixteen pints. During the performance of the operation she lay on her left side at the edge of the bed: she bore it well, and remained comfortable during the night, until six on the following morning, when she was seized with chilliness and a sensation of sickness; her tongue became white; her pulse quick and flickering; her skin hot and dry; and she had a sensation of soreness, but no pain, when pressure was made on the abdomen. From this time she continued to sink, and died at half-past six P.M. on the following day.

*Necroscopic Appearances.*—A large, irregular, multilocular cyst occupied the whole anterior part of the abdomen, by its external parietes adherent to the abdominal walls, and to the small and large intestines generally. The cystiform tumor began in the right ovary, at least so far as could be learned from dissecting the parts, which were so adherent by old inflammation, as to render a very decided opinion impossible. The uterus was not enlarged. The chief part of the tumor consisted of large irregular cysts; but in the walls of those placed in the interior of the mass they were very much smaller, varying in size from a pea to a nutmeg. They were filled with a tenacious gluey fluid, floating in which were a number of compound cells, of the character shewn in the drawing.

The peritoneum was discoloured and much thickened by old peritonitis: the intestines were also adherent, in parts, by more recent inflammation. The serous coat was much thickened, and could be readily dissected off in laminae. The muscular and mucous coats could also be readily separated; so that if any part of one of the coats were held in the hand it might be drawn out from the others, forming an entire tube.

The liver was adherent to all the surrounding parts, by old cellular adhesions: the tissue of the organ was very soft, and its structure indistinct.

The kidneys healthy.

The parenchyma of the lungs healthy: ecchymoses existed over the pleura pulmonalis at the basis of the right lung.

The heart was healthy.

*Microscopic appearances.*—In the secretion contained in the cysts, and which resembled white of egg, there existed the two kinds of lobules depicted in the diagram, sometimes the larger, at others the smaller predominating. Aggregated as they were together, they formed opaque white flaky masses in the homogeneous contents of the cells. The contents of the cells were not soluble in æther. (Plate III. fig. 1.)

This case was, from the commencement, regarded by me as a case of multilocular encysted dropsy; but I was prepared to find that it had its origin in the left ovary, or on the left of the uterus. In the account of the necroscopic examination Dr. Gull states—"The cystiform tumor began in the right ovary, so far as can be learned from dissecting the parts, which were so adherent by old inflammation as to render a very decided opinion impossible." On referring to the patient's recital of her symptoms, I find that her attention was first directed to an uneasy fluttering sensation in the left iliac region, and after this had lasted for two months, she perceived a hard tumor of the size of a small hen's egg in that situation. Dr. Ashwell, under whose care she then placed herself, supposed that the disease originated in the left side of the pelvis; and from the time of my first seeing her until the period of her decease I was of the same opinion: for on comparing the measurements of the left side of the abdomen with those of the right, the former were found to predominate; and further, after paracentesis, the cyst and tumor retreated to the left side, while throughout there were more pain and obstruction to the circulation on the left than on the right side.

Did the extensive and old peritonitis take place after the second paracentesis, when the tenderness, flatulence, and tension of the abdomen was noticed? The secretion contained in the cyst resembled the white of an egg, and in it (as stated) there existed two kinds of globules. The microscopic characters are shewn in the plate.

The second case was that of E. R——, who was admitted August 13th. She was a woman 40 years of age, of moderate conformation, dark hair, and pale complexion. Her occupation was that of a tailoress, confined frequently sitting at

work, in a small room of a narrow street in Lambeth, for twelve or fourteen hours a day. Her habits, she stated, had been regular, and she had always had a sufficiency of food. She had been married fourteen years, but had never become pregnant. She had experienced for ten months a fulness in the front passage, and this had increased until the period of her admission. For two months she had suffered from pain in the right groin, extending to the hips and back: the pain was of a shooting, stabbing character, and was not accompanied with any vaginal discharge. When admitted, her countenance was anxious, and indicative of suffering; the eyes sunken, and surrounded with a dark areola; respiration regular and natural; the pulse small and quick; the abdomen, at its upper part, was soft, but rather tympanitic; inferiorly full; on the left side free from tenderness, and resonant; but at the right side dull on percussion, uneven, and causing pain, even when but slight pressure was made. About one and a half or two inches above the anterior and superior spinous process of the right ilium two or three rounded bodies were felt, having a restricted motion, and causing her pain when pressed upon, or when the limited movement was effected. Below these bodies, or between them and the brim of the pelvis, percussion returned a dull sound, and careful examination detected a distinct fluctuation. On the day of her admission the catamenia made their appearance, but lasted only twenty-four hours. They had not appeared since the previous June, and only then in consequence of a vaginal examination to which she was subjected, the monthly flux not having taken place since the previous March.

Her bowels were usually relaxed, and, when soluble, the motions caused her no difficulty in their passage; but she possessed but slight control over the sphincter ani; her motions, when figured, assumed a flattened appearance. She suffered considerable pain in micturition, passing but little water at a time, and that with great difficulty: the urine was healthy, free from albumen, and of good colour.

On examination "*per vaginam*," the uterus was found to be seated rather high; the os was patent, and readily admitted the uterine sound, which was passed to rather more than three inches, and the viscus was found to be placed rather obliquely, its fundus directed upwards and to the



right: the neck of the womb was flattened and pushed forwards. Moving the uterus by means of the sound, it was found to be unconnected with the tumor occupying the right iliac fossa; and this was confirmed by keeping the uterus steady while the tumor itself was moved by the hand externally. The vaginal canal was obstructed by a swelling, of a wedge shape, behind it, which could be traced as high as the finger could reach: pressure, which occasioned her some pain, caused it in some measure to yield. One hand placed on the abdomen, and a finger of the hand kept in contact with the tumor felt in the vagina, detected evident fluctuation. On examination "per rectum" it was found that the calibre of the intestine was much diminished; the examining finger could not be passed beyond or behind the tumor in the recto-vaginal septum, and fluctuation was readily detected here, as in the vagina. A catheter introduced into the bladder found the neck of this viscus pressed upon by the misplaced uterus: the organ itself was small, and directed to the left side. On August 27th, as fluctuation was more distinctly felt, a grooved needle was passed into the posterior wall of the vagina, and about 3iij of thin serous fluid escaped through the groove: an equal quantity flowed from the vagina after the patient had been placed in bed. After the sac had been emptied, the finger was readily passed "per rectum;" but the cyst appeared to be firmly attached or tied down in the recto-vaginal pouch. The cyst could also be detected in the right inguinal region.

Tonics and porter were ordered.

On September 3d the tumor felt fuller, and she had some uneasiness in the passage of the fæces: the calls to void the urine were more frequent.

6th. The sac was re-filling quickly: it extended from the iliac to the right lumbar and inferior part of the right hypogastric region: it caused considerable pain in the course of the sciatic and crural nerves. She had a slight limp in walking, not having so much power over the right as over the left leg; and the impotence of the sphincter ani had returned. The superficial veins of the right side of the lower abdomen were visible, and distended.

29th. She complained of pain in the course of the distribution of the right obturator nerve.

On the morning of October 6th the tumor was emptied by means of a trocar and canula: the fluid was of a darkish, red colour, coagulable, and, after standing for some hours, separated into a dark-coloured, heavier mass, which gravitated to the bottom of the vessel, and a lighter-coloured supernatant fluid.

From the 6th to the 11th she had no unfavourable symptoms. In the evening of the 11th there were symptoms of the return of the catamenia, which accordingly made their appearance on the following morning; but lasted only twenty-four hours. From this time she gradually improved, and left the hospital on the 28th. She paid me occasional visits, and remained tolerably free from the symptoms which have been detailed, until the commencement of February, when they gradually returned, becoming more and more troublesome until the 27th, when about twelve ounces of a lightish yellow-brown fluid were drawn off. On the 6th of March she attended as an out-patient, got wet through, and fainted while waiting in the surgery. With difficulty she reached her home, completely exhausted. She soon experienced rigors, succeeded by a diarrhœa and cough, great prostration, and inability to take any kind of nourishment. On Monday the 9th she sent a messenger to my house, requesting I would send some one to see her. I gladly availed myself of the services of Mr. Rump, who found her in a state of great exhaustion; the diarrhœa almost constant; her face pale and shrunk; her tongue flabby and almost colourless; her pulse small and feeble; extremities cold; slight pain in the right iliac fossa, but the other parts of the abdomen were tolerant of pressure. He prescribed,

Mist. Cret. C.  $\bar{c}$  Opio, and beef-tea, with brandy and water.

On the following day, the 10th, she seemed rather better, and complained of little or no pain: the pulse was rather fuller; extremities still cold. She had passed a considerable quantity of fœtid urine, resembling in appearance thin gruel, which, after standing some time, gave a purulent-looking deposit: the motions were clay-coloured, and highly offensive. She was ordered,

Ammon. Sesquicarb. gr. v. ex Dec. Cinch. 3tis horis; with nutritive diet.

On the following morning all her symptoms were aggravated, and Mr. Rump brought her in a cab to the hospital. On her admission she was extremely exhausted; but after the application of warmth to the extremities, and the administration of wine, she in some measure rallied. At 6 o'clock P.M. I saw her. Her pulse was quick and small: the urine bore the appearances before described, very fœtid, and was passed involuntarily: the diarrhœa, which had temporarily subsided, had returned; the motions were of the colour and consistence of dark pea-soup.

Enema Amyli ʒiij. c̄ Liq. Opii Sedat. m xl. stat. injiciend; with Ammonia and Wine.

From this time she gradually sank, until mid-day of the 18th of March, when she died. The diarrhœa, which was checked by the starch and opium enemata, occasionally recurred: the urine maintained its colour and fœtid smell. A catheter was cautiously introduced into the bladder, to ascertain whether, in that viscus, it presented the same appearance and odour. Wine, brandy, and other stimulants were administered, but to no avail, the patient gradually sinking, with her mental faculties unimpaired to the last.

*Necroscopic Examination.*—Intestines not distended with gas: great omentum adherent to the uterus by old cellular bands.

*Uterus.*—The uterus was enlarged, rising as high as the brim of the pelvis, and filling its entire cavity; adherent behind to the sacrum by extension of the malignant growth, and to the sides by the same means: the whole hard, nodulated mass was removed entire from the pelvis. The cavity of the uterus was found to be small; its walls were degenerated into dense cartilaginous structure, and were adherent externally to a fungoid mass, probably having its origin in the left ovary. There existed a large irregular cavity, with sloughy fungoid parietes, between the rectum and vagina: a probe introduced through the cicatrix, by which tapping had been performed, passed directly into this cavity. The disease had also extended to the bladder, communicating by a large irregular opening in its posterior paries. The rectum was drawn to the right side, and flattened by pressure. Its muscular coat was hypertrophied, but no commu-



nication existed between its interior and the cavity before mentioned. On the right side of the uterus a large pendulous tumor existed in its external walls, the structure of which is shewn in the plate. (Plate I.) Similar hard and cartilaginous degenerations affected the pelvic and lumbar glands, implicating the sciatic nerves of the right side. The cellular tissue surrounding the internal iliacs was condensed and hard, apparently taking on the same malignant action, in the midst of which, however, the coats of the vessels remained entire, and their cavities unobstructed. The mesenteric glands were not affected.

*Bladder and Kidneys.*—The walls of the bladder were slightly thickened; the lining membrane ecchymosed, and much congested; the rugæ covered with plastic effusion: an irregular opening, four lines in diameter, led into the cavity above described: the ureters were distended: the pelvis of both kidneys enlarged, and containing puriform matter: both kidneys were also enlarged; their surfaces contracted so as to define the extent and position of the lobules, and white and variegated with undefined patches of injection and minute ecchymosis. On a section of the gland the whole cortical portion presented the same appearance: the white degeneration was not uniform, the striated appearance still remaining; and corresponding to the striæ that existed on the surface of the kidneys were prominent white granules of this size (O). The lobular portion of the kidneys did not seem much diseased. On a careful examination of the kidney, it seemed that the above appearances arose from inflammation of the uriniferous tubes, probably transmitted by continuity from the bladder and ureters: they were filled in great part with inflammatory exudation corpuscles, in place of their proper secreting epithelium. From the tortuous arrangement of the tubes the corpuscles could not escape from the tubes of the cortex, as from those of the pyramids, even if they had existed as copiously in the latter, which is not probable, as the pyramids are by no means so vascular as the secreting portion.

*Liver* healthy, and without any signs of malignant tubera.

*Lungs and Heart* healthy.

The disease of the uterus was of two kinds, the soft

medullary fungus, and the hard cartilaginous schirrhous; and a point of special interest was the development of cysts, containing clear serous fluid, and having the cerebriform fungoid masses projecting from the walls: such an one was found at the post-mortem examination, and was doubtless similar to that which had been punctured during life, and the walls of which had subsequently taken on a sloughing action.

*Microscopic appearances.*—The soft medullary tumors were made up of cells, having thick walls, giving them a double outline, and containing one, two, or three nucleated cells: there seemed to be no connecting tissue, which accounts for its soft and cerebriform character. They may be taken as a type of malignant formation. (See Plate III. Fig. 2.)

When this case was admitted I regarded it as one of encysted dropsy of the ovary; and considered that the cyst, falling into the recto-vaginal pouch, had there become adherent; because, when emptied, the sac did not admit of the slightest movement, and continued to re-enlarge upwards into the abdomen, by an increase of its fluid contents.

I was led to conclude that the abdominal adhesions, if any existed, were but slight, from the circumstance that the tumor, felt through the abdominal wall, was moveable; and further, that the ovoid bodies, which were seated in the upper part of the cyst, descended into the pelvis when the tumor was emptied by the needle, gradually rose as the tumor re-filled, and again descended when the fluid was drawn off through the canula. I had conceived the rounded bodies to be either multiple cysts, or fibrous tumors developed in the upper portion of the large cyst. The opinion here expressed in the main was correct; but one of the ovoid bodies was pendulous and attached to the uterus by a rather long stalk: this will account for the opinion expressed, "that there was not any, or but slight, connection between the womb and the tumor;" for when motion was communicated to the womb by means of the instrument, the tumor was at rest; and when the tumor was moved by the hand through the abdominal walls, it was not found that such movement was communicated to the uterus. It will also account for the rising and falling of the tumor according as the cyst was full or empty.

The disease of the uterus was two-fold: there was hard cartilaginous schirrhous, and there was soft medullary fungus. The cysts, which were developed, and one of which had been emptied three times, contained a clear serous fluid, while fungoid cerebriform masses projected from its walls.

The condition of the bladder, ureters, and kidney, is worthy of remark. It seems as if the inflammation had spread from the cyst to the bladder, and had coursed along the ureters to the kidneys. Both bladder and ureters were much injected, and contained inflammatory products. The condition of the kidneys, in the opinion of Dr. Gull, who inspected the body after death, and who devoted some time to the microscopic examination, was very different from the white degeneration found in Bright's disease.

The fine uriniferous tubes of the cortex could be seen, with a high power, to contain exudation globules; and in what, to the naked eye, might appear as homogeneous albuminous exudation, could be clearly distinguished the normal anatomical elements of the gland, white from the presence of an excess of the exudation globules, which also prevented the access of blood.

The treatment, I conceive, was the best that could have been employed under the circumstances; and, in my opinion, interference was necessary; for the fæces, when solid, were of tape-like form; and, as the patient had but slight control over the sphincter ani, they were, when fluid, frequently passed before she could reach the water-closet. The bladder and urethra were subjected to undue pressure and irritation; a catheter could with difficulty be introduced; the nerves were injuriously acted upon; there were numbness and weakness of the right lower extremity, causing her to limp. On each occasion when the fluid was drawn off, she recovered the perfect command of the sphincter ani; the calls to void the urine were less frequent; the numbness and weakness of the right leg were lost; and she had as perfect control over its movements as over those of the left.

A. M——, aged 34, was a strumous-looking woman, with pointed features. She had been married at the age of 22, and had had one child, still born, about twelve months afterwards.



The catamenia appeared at the age of 13, and continued regular in their recurrence, and normal in quantity. Four years and a half previous to her admission she perceived a tumor in the left iliac region, of the size of a hen's egg. This increased slowly for the first six months; at the expiration of which time she applied as an out-patient at Guy's Hospital. A second tumor was shortly after discovered, hard, circumscribed, and seated on the right side of the abdomen; and from this time until the period of her admission they continued to increase, extending upwards towards the umbilicus. Each could be moved independently, and between the two there was a depression in which fluid might be seen to ascend when pressure was made from below. The bowels were costive; there was occasional sickness, with considerable flatulency; the pulse was small and feeble. On examination the uterus was found to be increased in size from the presence of a large fibrous tumor within its walls, on the left side. The tumor, pressed through the abdomen, might be readily felt. Around the epigastric region she measured thirty-two inches; around the umbilicus forty-one inches. Purgatives, diuretics, and antacids, were prescribed, with the effect of relieving the bowels, increasing the flow of urine, diminishing the ascitic fluid, allaying sickness, and removing flatulency; and after three months' residence in the hospital she was presented; but again admitted in March. For the first six weeks after she left, she continued tolerably well; but lancinating pains in the groins, extending round the hip to the spine, with inability to maintain the erect posture, then attacked her. The abdominal swelling rapidly increased, but her health did not give way until about three weeks before her re-admission, when she was the subject of bronchitis. She had no appetite; was very thin; had troublesome cough, with greenish-yellow sputa; perspiration was profuse; menstruation was continued at irregular intervals, occurring at the end of every fortnight, three, and sometimes five weeks; her tongue was clean; pulse regular, but small; bowels regular. She measured forty-four inches around the umbilicus. She was ordered,

Pot. Acet. gr. xv. Tinct. Scillæ m xx. ter quotidie, ex Julep.  
Ammon. Acet.

This relieved her cough and increased the quantity of urine, which was of sp. gr. 1.016, neutral, and free from albumen.

*April 6th.* Measured around the umbilicus forty-five inches: passed two (measured) pints of urine in the twenty-four hours.

20th. Measured forty-six inches.

26th. The ascitic fluid was increasing in quantity, and the secretion of urine had diminished.

On May 6th, paracentesis was performed two inches below the umbilicus, and ten quarts of a thick, yellowish, glutinous fluid were removed. After the cyst had been emptied the abdomen appeared to be occupied by a prominent swelling, extending to the hypogastric region, but higher on the right side than on the left: the prominence was also more considerable on the right side than on the left, causing much bulging forwards: the tumor was hard and firm, and its surface was irregular. A distinct tumor could be felt occupying the pubic and umbilical regions. She recovered from the operation without one unfavourable symptom, and on May 19th left the hospital.

*Pelvis, abscess of.*—I. E. L——, aged 30, a spare woman, who had lost her husband six years, having lived with him four. Two years after marriage she gave birth to a living child, after a protracted labour. Previously to her pregnancy and after weaning her child, the catamenia were regular, with two exceptions, on which occasions she had suffered from similar symptoms. Three weeks before admission she got very wet, in fact "her clothes were soaked:" her feet were wet some hours before the other parts of her person. She shortly after felt unwell, and menstruation commenced, although not due for a fortnight. She had severe shiverings, followed by intense heat of the surface, pain in her back and thighs, with tenderness and pain in the lower abdomen. The posture in which she obtained the greatest ease was on her back, with her legs drawn up. Inflammation of the bowels, as she stated, was suspected. Her symptoms persisted until the 29th of October, when something appeared to burst internally, and a considerable quantity of matter came away; she now felt much easier and more free

from pain. On admission her face was flushed; breathing hurried; pulse 112, weak and thready; abdomen sub-tympanitic, free from tenderness, except in its lower and left portion, where external examination detected a hardness. The boundaries of this hardness could not be readily defined on account of the pain caused by the slightest pressure of the hand. Percussion elicited a clear and distinct sound in the normal situation, except over the left iliac fossa and suprapubic region. Her bowels were costive previously to her admission, but in a short time there was a discharge of fœtid greenish-coloured pus, to the amount of nearly three ounces. She had not experienced any difficulty in micturition, although the calls to pass the water were frequent. The menstrual discharge, which persisted during the three weeks, ceased just before her admission into the hospital. On examining per vaginam, a firm cicatrix was found at the upper and posterior part of the vagina, diminishing its calibre. The posterior lip of the os uteri was hypertrophied and indurated. The uterus was large, and fixed in the pelvis, on the left side. The roof of the vagina was tense, hard, and inelastic. The finger, passed per rectum, found the calibre of the bowel diminished by the size of the womb and by the induration in front of the intestine. The immobility of the uterus was further determined by this examination; but no opening could be detected by the examining finger in that portion of the intestine which could be reached, and when removed it was not smeared with pus. Ordered,

Ammon. Sesq. gr. v. Inf. Cuspariæ ʒiſs. ter quotidie sum.

*Oct. 31st.* The pain and tenderness were lessened; the discharge of pus continued, but in smaller quantity.

*Nov. 2d.* The bowels were confined; there was no discharge of pus; the appetite had improved; the pain and induration of the left iliac space had diminished.

Haust. Sennæ. ̄ Magn. Sulph. stat.; et Pergat.

*5th.* She complained of being unable to sleep at night: her strength had much increased, and her appetite had improved: there was no return of the discharge. To have a pint of porter daily, and to continue her medicine.



7th. In the afternoon of this day, she was suddenly seized with pain in the lower part of the right chest and right hypochondrium, ushered in by rigors and a feeling of coldness. The pulse was small and quick; the extremities cold; the features pinched; the face pale and anxious; the pain constant, but increased in paroxysms. Warmth was applied to the extremities and seat of pain; one grain of opium was administered, and she was desired to take julep. ammoniæ ʒifs. occasionally, until reaction was established, and to have a stimulating enema immediately.

On the 8th the pain had gradually declined, except in the right hypochondrium, where she could not bear the slightest pressure: her bowels had been copiously relieved; the pulse was quick, small, sharp, and 110; the breathing hurried, and increasing the pain in the right side.

Hirudines xx. hypoch. dext. stat. imponend.; et postea Catap. Lini.

Ant. Pot. Tart. gr.  $\frac{1}{2}$ . Opii. gr.  $\frac{1}{2}$ . Hyd. Chlor. gr. i. fiat pilul. 4tis horis sumend.

9th. Pain relieved by the leeches; no sickness; no relief from the bowels; pulse diminished in number, and not so sharp.

Enema commune statim injiciend.; et P.

10th. A small quantity of fæcal matter had been passed with the injection; the pain was more circumscribed; pulse 95, softer; tongue coated, but moist; gums slightly spongy; and there was a slight mercurial fætor in the breath.

Pil. rep. 8tis horis.—Haust. Sennæ. c Magnes. Sulph. stat. sum.

On the 11th the bowels had been freely relieved, and pain and tenderness less.

Rep. Pil. horâ somni.

Julep. Ammon. Acet. ʒi. Liq. Ant. Pot. Tart. ʒfs. 6tis horis.

13th. She was greatly improved; her countenance had lost its anxiety; her pulse was 96; the inner membranes of the mouth and gums were sore; the mercurial fætor still persisted; the bowels were freely open; there was no discharge of pus from the rectum; the pain in the abdomen had decreased. She bore external examination by the hand without complaint. At one circumscribed spot a rubbing could be

felt by the hand, and distinctly heard, both by the ear applied to the parietes, and by the aid of the stethoscope.

Mel. Boracis pro re natâ utend.

Pil. omit.; et perstet in usu Mist.—Milk diet allowed.

On the 17th she had lost all pain in the abdomen. Her mouth was still sore; the bowels acted regularly, and the fæces were natural in appearance; there was no discharge from the rectum; she slept well during the night; her tongue was clean, moist, and indurated at the edges; the pulse was 94, small and compressible.

Sp. Ammon. Comp. m xx. ex Inf. Calumbæ ter quotidie.

23d. Free from pain; appetite considerable.—Fish diet.

*Dec. 5th.* Although she made no complaint, a vaginal examination was made, when the uterus was found to be more moveable than on her admission, but still fettered by the deposit anteriorly and to the left side: pressure on the upper part of the vagina, which was still tense and inelastic, did not seem to occasion her any very great pain. The left iliac region, examined externally, still afforded dulness on percussion, but not to the same extent as on her admission. There was no swelling of the lower extremities, although she complained of a sensation of numbness in the left, and declared she had more difficulty in keeping up the temperature of the left leg than the right. Being anxious to return to her family, she was presented on the 9th.

A. W——, aged 25, of moderate stature, light complexion, pale face, and flushed cheek, was admitted into Petersham Ward April 8th. She had been thrice pregnant; the first time five years, the second two and a half years, and the third five months before: the last labour had been tedious, and the child alive, and very large. The after-pains continued severe for some time; and from the first month after delivery there were severe cutting pains in the vulva and groins. About four or five weeks after her confinement she was attacked with cold chills, and the pain in the parts changed to one of a throbbing character. This continued up to the period of her admission. On external examination some induration was felt in the left iliac and inguinal regions, extending almost to the centre of the lower abdomen: in one spot in the groin

there was slight redness; and the finger detected, although not very distinctly, fluctuation. On internal examination the uterus was found to be free from disease, but large: the left side of the roof of the vagina was hard, tense, and inelastic; and there was a fulness, corresponding to the swelling, detected externally: there was no discharge. The urine, which at one time had been passed with pain, was now passed with ease, and the bowels were regularly open. Respiration was rapid: pulse small and quick. Ordered,

Quin. Disulph. gr. ii. Tinct. Hyoscy. m xv. ter quotidie, ex Infus. Cuspariæ.

Emp. Canth. inguini sinistro.

Mutton chop. One pint of porter.

Nov. 12th. But little change in the swelling, although in one point the integuments seemed inclined to give way. General health improved.

16th. On examination, the point of the abscess was resonant on percussion, had a crepitating feel, and was very tender. She was restless, but her general health was better. The tongue was very red, and the bowels had been relaxed in the morning.

Hydrag. c̄ Cretâ, gr. iii. Pulv. Ipecac. Comp. gr. vii. m. fiat pulv. stat. sum.

Mist. Cret. C. c̄ Conf. Aromat. ʒi. Tinct. Kino ʒi. post sing. liquid. sedes.

On the 18th the bowels had been less irritable: the motions had been minutely inspected, but no pus had been detected in them.—Ordered, port-wine ʒiv.

21st. Countenance distressed; inspirations short and catching, caused by the pain produced in the groin when she breathed; tongue red and aphthous; skin, free from heat. Mr. Cock opened the abscess. At first a puff of fœtid gas escaped: this was followed by about four ounces of pus, mixed with globules of air: a poultice was applied, and, when changed, about two ounces more pus were collected.

22d. Had greatly improved; breathes without difficulty; abscess discharging.

24th. Slept well: wound still discharged freely, but no pus had passed through the wound, neither had the discharge a fœculent smell. A probe could be passed backwards to the



extent of nearly four inches, and inwards towards the median line to the distance of eight inches.

*May 1st.* Discharge continued, but thin.

On the 19th no symptom required a detailed report, as she had regained pretty good health. A wide flannel bandage had been applied around the thigh and body, making pressure on the walls of the abscess by means of compresses. The discharge was less in quantity, thin, and watery: it saturated a small sponge during the day. She could walk without inconvenience or uneasiness. The probe could only be passed backwards to the extent of an inch.

Having gone on well to the 30th, she was presented. After she had left the ward she attended once at the hospital, and appeared to have regained her wonted strength and appearance. There was still a little thin watery discharge.

*Pelvis, Inflammation of.*—S. R——, aged 30, was admitted June 6th. She had had five children and one miscarriage. During the last four months of her last pregnancy she had suffered from pain in the right side, extending down the thigh; but not attended with difficulty either in defæcation or micturition. She was delivered, a month previously to her admission, of a living child, after a natural but rather tedious labour, during the progress of which she suffered from severe cramps. During the first few days she progressed favourably; but was subsequently attacked with chills, followed by pain, abdominal tenderness, &c., the lochia still persisting. Leeches, aperients, calomel, and Dover's powders were prescribed. All were employed, with the exception of the leeches, which the nurse refused to apply. Three weeks after delivery she was seen by Mr. Roper. She had a quick feeble pulse, 120; brown tongue; hot febrile skin; twitchings down the right leg. In passing the fingers into the right iliac fossa an indurated roundish tumor could be felt, of the size of an orange; this could also be felt by a vaginal examination; the os uteri appeared to be fissured; the uterus itself was drawn to the right side, and not so moveable as natural: the discharge was copious, sometimes lochial, sometimes leucorrhœal: she had frequent rigors, followed by diaphoresis. Leeches were applied to the right groin.

Hydrarg.  $\bar{c}$  Cret. gr. ii. Pulv. Doveri gr. iii. in formâ pulv. omni nocte; et Mist. Salin. 6tis horis.

These means were continued until her admission into the hospital, when the swelling was distinctly felt, both by vagina and externally, and was attended with considerable pain when even slight pressure was made by the hand. Ordered,

Hirudines vi. part. dol. affectæ applic.

Hyd. c̄ Cretâ gr. ii. Ext. Conii gr. iii. omni nocte.

Julep. Magnes. c̄ Tinct. Hyoscy. ʒss. ter die sumend.

June 11th. Gums slightly touched with the mercury : pain and swelling less.

20th. The pain and swelling much diminished : she felt altogether much better. The catamenia had appeared on the previous day, in full quantity : mouth tender.

Rep. Pil. alt noct ; et P.

27th. Neuralgic pain in the face : less pain and induration in the right pelvis ; slight bearing down, with leucorrhœal discharge. Ordered,

Pil. Hyd. Chlorid. Comp. gr. v. omni nocte.

Pot. Iodid. gr. iii. Liq. Pot. m x. ter quotidie ex Dec. Sarzæ C.

Dec. Papav. O i. Liq. Plumbi Diacet. ʒii. pro lot. ter die injiciend.

These measures she continued ; and was presented well on July 14th.

*Polypus, fibrous*.—E. W——, aged 43. She was married at 16 ; became a widow at 31 ; and was married to her second husband in twelve months. By her first marriage she had a living female child ; but miscarried seven or eight times after her second ; and suffered from a continual white discharge, which had so drained the system that mind and body were both enfeebled. She had lived hardly and badly ; has drank regularly, but moderately (as she says), of gin and beer. From the time of her last miscarriage she had been free from discharge ; but there had been violent bearing-down pains, followed by a forcing down of the womb. At first this was painful, but latterly she lost all sensation, but readily bled when touched. Careful examination detected a polypus, of a fibrous character, protruding through the os uteri : it was free from pain, but bled on the slightest pressure being made. A ligature was passed, by means of the improved Gooch's canula. The operation caused but little, if any,

pain: neither nausea, nor any unpleasant symptom followed. The ligature was tightened by one turn of the rack every day; the vagina syringed with warm water; the patient kept at perfect rest, and sustained by a light nutritious diet, with four ounces of wine daily. Five days after the operation the ligature separated; and the tumor, the size of an orange, removed with the forceps. She remained in the hospital a few days to gain strength.

E. R——, aged 33; was seen by me previously to her admission into the hospital. She was married at 22 years of age, her previous health having been good, and her menstruation quite regular. In eleven months she gave birth to her first child, after a moderately easy labour. Three years elapsed between the birth of this and her second child. About four years before admission she observed a thick purulent vaginal discharge, which a surgeon had arrested by the use of an injection. In a few months she suffered from fever; and during this illness a watery inodorous discharge made its appearance: this, after a time, changed its character; it became starchy instead of watery, and was passed in larger quantities between the catamenial periods, which had maintained their regular character, but the flux had been very profuse. In February 1845 the starchy discharge became tinged with blood, and she felt a sensation of swelling and bearing down. These increased until a tumor descended, but only while walking or after standing for a long time; and, if procident, when she lies down or sits upon a hard seat, it will gradually and painlessly ascend. She had walked some distance when I first saw her, and the tumor was then hanging through the labia: it was of the size of a foetal head of the seventh or eighth month, but of a cordiform shape, not unlike the figure of a bullock's heart, bluntly sensible, presenting a polished shining surface. The external membrane was covered with numerous minute vessels, ramifying in every direction. In numerous places the outer membrane was raised by a sanguinolent fluid, giving the appearance of bullæ: these were exceedingly tender, bursting on the slightest touch, and discharging the fluid. She had never suffered acute pain, but had had much difficulty in evacuating the bladder, which was very irritable. The motions



were passed without trouble, although, while at the water-closet, the tumor invariably protruded; and she was in the habit of taking a napkin with her and returning it. Her face was pale and exsanguine; her legs and feet swollen and œdematous; her tongue was pale and indented; respiration quick, and hurried by the slightest exertion; the action of the heart irritable; pulse 112, small and hæmorrhagic; *bruit de diable* very audible in the neck: there was a sensation of sinking in the chest, with frequent attacks of globus: her appetite was capricious (for some time she had lived upon oysters and stout): there were aching pains and a sensation of dragging in the loins, with occasional numbness of the left arm, side, and leg. Percussion elicited normal sounds over the whole abdomen. By a vaginal examination (the tumor being within), the anterior lip of the uterus was felt high up, thin, and ring-like, tightly girding the anterior part of the tumor which passed under it. The posterior lip could not be reached by the finger, although the promontory of the sacrum was touched. On the right side, and anteriorly, the uterine sound was passed one inch and a half; on the left, fully two inches. When admitted, the tumor, as seen by separating the labia and directing her to bear down, was of a livid reddish colour, and, by pressure, gave slight crepitation: in one or two places on its surface there were spots of apparently commencing ulceration in the situation previously occupied by the bullæ before noticed. Large veins were seen wandering through its texture, whilst its surface displayed great vascularity. She was ordered,

Julep. Ammoniæ  $\mathfrak{z}$ iss ter quotidie.—Porter.

Oct. 7th. Discharge copious, but slightly tinged with blood.

Quin. Disulph. gr. ii. Tinct. Lupuli  $\mathfrak{z}$ fs. Inf. Rosæ C.  $\mathfrak{z}$ ixfs. m. ft. haust. ter die sumend.

15th. As her health had somewhat improved, the polypus was tied by means of the improved Gooch's canula. Very thick whipcord was used for the noose. The ligature was placed high up, but within reach of the finger behind, and within the lip of the womb in front. After the operation, a quarter of a grain of morphia, with some brandy, was given to her: she was permitted to continue her porter. Pulse 86: no pain, except such as was of the usual dragging character, and felt

towards the back. In the evening her pulse was 93; urine had passed freely; no tenderness nor sickness.

Morphiæ Acet. gr. fs. hora somni sum.

16th. Had slept tolerably well till 4 A.M., but was restless at 10 A.M.; both urine and fæces had passed; pulse 100.

Rep. Morph. stat.

10 P.M. Pulse 104; no sickness; slight tympanitis.

Rep. Morph. hora somni.

17th. 10 A.M. Having slept several hours, appeared tolerably quiet; had been sick once; discharge from vagina copious. The tumor was of a dark livid colour; its outer membrane appeared to be separating; considerable fœtor; less tympanitis, but slight tenderness above the pubes; ligature tightened; pulse 112; tongue pale and moist; urine passed freely, and she had a desire to evacuate the bowel.

Morphia repeated.—An egg, mixed with brandy, was ordered.

9 P.M. Had suffered great pain for half an hour in lower abdomen, which was sub-tympanitic.

Enema Ol. Ricini stat. injiciend.

Rep. Morph. Dec. Papav. c̄ Lot. Sod. Chlor. vaginæ injic.

18th. Had had several hours' sleep; injection returned in a short time, with but little fæculent matter: less pain in abdomen; tympanitis diminished; discharge fœtid; pulse 104; ligature tightened by two turns of the cord.

10 P.M. Bowels not open; some sickness; pulse 104.

Ol. Ricini ʒfs. cras primo mane sum.

Rep. Morph. 8vâ quâque horâ.

One pint of porter was ordered in lieu of the wine, to which she had taken a dislike.

19th. 10 A.M. She had had several hours' sleep, cord tightened; no pain in the abdomen; but when the rack was turned she felt a dragging in the back, and a sensation of bearing down, with sickness; pulse 120.

10 P.M. Cheerful, having passed a very comfortable day; pulse 120.

20th. 10 A.M. Pulse 120. The tumor had altered its position: it had descended lower, and appeared more loose; the tightening of the ligature caused her more pain than at any previous twisting: bowels not yet open; abdomen free from

tympanitis, pain, or tenderness. The drawing (Plate II.) was taken to-day. The tumor measured  $9\frac{1}{4}$  inches long and 8 inches wide.

10 P.M. Rather irritable.—Continue Morphia.

21st. Had passed a good night; there was but very little discharge; ligature tightened by three quarters of a turn; pulse 104.

22d. Having passed a good night was in good spirits, though complaining of occasional pains in the head.

10 P.M. Her bowels had been open once; she drew the tumor forwards whilst the motion was passing: had been sick once, and brought up some tea; was hysterical, and complained of violent bearing down and crampy pain in her leg.

Morphiæ Acet. gr.  $\frac{3}{4}$  hac nocte; et Perstet in usu gr. fs.  
8vâ quâque horâ.

23d. Had had some sleep, but the bearing down had become excessive. On separating the nates, the whipcord could be seen, having a portion of the structure, about three-eighths of an inch in diameter, to divide. I determined to separate the tumor by a bistoury below the ligature; but whilst this was being done, by a sudden movement she detached the canula; a small quantity of blood oozed from the divided surface: to this a dossil of lint was applied, and confined in its situation by means of a T bandage. The tumor, when separated, was in the form of a bullock's heart, the point being directed forwards, the base backwards. Its weight was two pounds ten ounces and three quarters avoirdupois. The nourishment taken during the last twenty-four hours amounted to half a pint of beef-tea, one pint and a quarter of arrow-root, half a pint of milk, three eggs, six ounces of brandy, one pint of porter, and tea.

(Midnight). Had had two figured motions: pulse 104.

24th. Complained of soreness of the mouth, the lining membrane of which was covered with small blisters: bowels opened twice; no abdominal tenderness; great depression of spirits.

Mel. Boracis pro re natâ utend.

Sp. Ammon. C. ʒfs. Conf. Aromat. ʒi. Infus. Cuspariæ ʒixfs.  
ft. haust. 6tis horis sumend.



25th. Had had five fluid motions since last night: there was some tenesmus; the vaginal discharge was yellow, purulent, but not offensive; less soreness of the mouth.

The porter to be omitted, and replaced by six ounces of Portwine.—Cont. Medic.

9 P.M. Motions still loose, slimy, and passed with considerable pain; no sickness; complains of want of sleep.

Enema Amyli  $\bar{z}$  ij.  $\bar{c}$  Tinct. Opii m xxv. stat. injiciend.

Liq. Opii Sedat. m xxv. Aq. Ment. Pip.  $\bar{z}$  xfs. m. ft. haust. stat. sum.; et P.

26th. Had had several hours' sleep during the night; pulse 100; sick once after taking her draught; bowels not open; urine passed freely; discharge less, and thin.

8 P.M. Restless and low spirited.—Rep. Morphia.

27th. Was considerably better; pulse 104; bowels not relieved.—Cont. Medic.

28th. Much improved, and takes nourishment freely; pulse 104.

29th. Had passed two pulpy fæculent motions, attended with slight pain in the bowels; no sleep (having refused to take the morphia pill last night); irritable and restless.

Vin. Opii m xxv. Sp. Ammon. Arom.  $\bar{z}$  fs. Syr. Simp.  $\bar{z}$  i. Aq. Ment. Pip.  $\bar{z}$  viii. ft. haust. stat. sumend.

30th. Had several hours' sleep after the draught; pulse 100.

Nov. 1st. Complained of a pain in the head, with a sensation of dizziness; appetite for food increasing; on the preceding day she had taken fish; no discharge.

4th. Pulse 100, small and weak; tongue moist and pale. Ordered,

Ferri Citrat. gr. iv. Tinct. Lupuli  $\bar{z}$  fs. Syr. Aurant.  $\bar{z}$  i. Aq.  $\bar{z}$  viiifs. m. ft. haust. ter quotidie sum.

To take two ounces of brandy daily in arrow-root.

6th. She stated that the medicine had disagreed with her, causing sickness and loss of appetite, and an increased sense of depression.

Pot. Bicarb. gr. xv. Ammon. Sesq. gr. vi. Tinct. Hyoscy.  $\bar{z}$  fs. Syr. Aurant.  $\bar{z}$  i. 6tis horis sum. cum. coch. uno amplo limonium succi.

Brandy eight ounces. Port Wine four ounces daily.

10th. Was much better; voice stronger; appetite had improved; bowels regular; pulse stronger; discharge very slight. Allowed half a pint of porter daily.

13th. Was still improving: sat up for the first time with little fatigue; had slept better, and had lost the uneasy sensation in her head; her bowels, which had not been opened for three days, were relieved by a dose of castor-oil.—Perstet.

22d. By her express wish she went home. On vaginal examination, the right side of the os uteri was found to be slightly puckered; the left side appeared in its natural and healthy condition. She was directed to take two grains of quinine, in the form of a pill, three times a day; to attend to the state of her bowels, and to take nourishment freely.

In a month she attended at my house, greatly improved in appearance and in health: the menstrual function had returned, natural in colour, and of proper quantity.

In a few months she became pregnant; but about the seventh or eighth week miscarried, the abortion being caused by violent exertion.

The polypus was of a strictly fibrous character, and on section displayed the open mouths of numerous large blood-vessels.

To obviate the difficulty that is sometimes experienced in passing Gooch's double canula around the polypus when it is large, as well as to prevent any injury either to the vagina or the tumor itself, I have had a canula made, consisting of a single tube seven inches and a half in length, and about the size of No. 12 catheter. The uterine end of the tube has a partition to separate the ends of the ligature. To the outer end of the tube is fitted a plug, which is attached to a frame-work containing a rack to receive the ligature. This is received and tightened by a wheel, which has a spring preventing any recession.

*Polypus, malignant.*—M. T——, aged 44, a silk weaver; had lived regularly and well. Catamenia appeared at 19, very scanty: after a short time ceased for twelve months, when they again returned, and continued regular and normal. Married at 23, and had given birth to three live children;

labours tedious; the last occurred eleven years before admission. The face was pale and sallow; tongue moist and flabby; bowels costive; urine voided in good quantity, but depositing a purulent-looking sediment. Fifteen months previously she had been alarmed by the flow of a large quantity of blood from the vagina: this returned at irregular but frequent intervals; her health became much impaired; and she applied as an out-patient at one of the City hospitals; but no vaginal examination took place. Before her admission into Guy's Hospital, July 2d, the symptoms became much aggravated: she was exceedingly weak; pulse small, hæmorrhagic; tongue pale and œdematous; respiration hurried on the slightest exertion. On vaginal examination, the uterus was found to be enlarged, and seated low in the pelvis; the os uteri was patulous, and readily admitted the fore-finger. The uterine cavity was occupied by a soft polypoid growth, attached to the anterior part of the uterus by a broad neck: this bled on the slightest touch. The discharge from the vagina, previously to the examination, was thick, purulent, and offensive, and occasionally sanguinolent. The patient was ordered,

Tinct. Cinch. Comp. ʒi. Acid. Nit. dil. m viii. Dec. Cinch. ʒxi.  
ter quotidie.

Dec. Quercūs c̄ Alum pro inj.

One Pint of Porter.

This treatment was persisted in until she left the hospital, September 1st, her health greatly improved; her face had lost its sallowness; the frequency of her pulse had diminished, whilst its volume had increased. No less marked was the change in the uterus. The discharge had gradually diminished, and at length ceased; while the os uteri, which at first readily admitted the finger to explore the cavity as well as the character and attachment of the growth, had become more firm, more and more closed, until at length the uterine sound only could be passed, and that with some little difficulty.

For some time she kept from the hospital; but on a return of the symptoms she applied, and was re-admitted May 13th, 1846. For some weeks she had suffered from sanguineous discharge, attended with pains and weight in the back and lower part of the abdomen; she had a sallow, worn



aspect; her pulse was 84, and small; her tongue pale, moist, and flabby: for a fortnight she had had daily two or three fits of shivering, followed by heat and perspiration. There was some cough, with bronchial expectoration. The hand placed upon the abdomen detected some tenderness. On vaginal examination the uterus was found to be enlarged; the os admitted the tip of the finger, which could just reach the growth which distended the cavity; the uterine sound could be passed posteriorly to the distance of two inches and three quarters.—Ordered,

Dec. Cinchonæ c̄ Tinct. Cinch. Comp. ʒi. Acid. Nit. dil. m x. ter die.  
Pil. Conii c̄ Ipecac. omni nocte.

30th. Much better; countenance less pallid; no return of sanguineous discharge for some days; copious yellow discharge.

Dec. Quercûs c̄ Alum. pro lot.; et Pergat.

Appearance much improved; more cheerful; less pain in the back, uterus more firm; the os would not admit the tip of the finger.

31st. Pain in the back and abdominal tenderness had gone; her appearance had much improved. Wishing to leave the hospital, she was presented.

M. W——, aged 40; admitted Nov. 5, 1845; married nine years, but had lost her husband two months. She began to menstruate at the age of 14: her catamenial periods recurred every three weeks, and the quantity had been unusually copious; miscarried once at an early period; had had no children; her habits of life had been regular; and she had followed no manual occupation. Ten months previously to her admission she was taken with flooding, difficulty in walking, excruciating pains in the pelvis, and bearing downwards. For these she was treated by a medical man with vinegar-and-water applications, and medicine which salivated her. For a month she had been confined to her bed, and during this time had several attacks of hæmorrhage. On admission her complexion was sallow; her pulse small, 104; tongue moist and flabby. There were shooting pains in the uterus, accompanied with a discharge of mucus tinged with blood; pains aggravated towards night, and to such a degree that she could obtain no sleep without opiates. When pressure was made

over the region of the uterus she expressed much suffering; and considerable uneasiness was experienced either when the fæces were expelled, or when she assumed the erect position. On examination a polypoid malignant growth was found protruding through the os uteri, to the distance of about three-quarters of an inch; and on gently passing the finger it was found to grow from the anterior part of the womb. By means of the glass speculum the nitric acid was applied to the growth. Ordered,

Ammon. Sesq. gr. iv. Tinct. Cinch. Comp. ʒi. ter quotidie, ex

Dec. Cinch. ʒxi.

Port Wine four ounces.

11th. Had improved in appearance; discharge continued; had slept but little.

Ext. Hyoscyam. Camphoræ āā gr. v. omni nocte; et Pergat.

14th. Had slept better after the pills. Nitric acid was applied, on the 13th. By means of the uterine sound, the growth was found to extend from the whole of the anterior surface of the uterus: discharge not offensive.

23d. Her general appearance improved. Was menstruating.

25th. Nitric acid applied, and caused her some pain.

29th. Discharge colourless and thick; the growth seen through the speculum had considerably diminished in size; bowels confined.

Ol. Ricini, ʒʒss. stat.; et Pergat.

Dec. 2d. By means of a pair of forceps the greater part of the polypoid growth was twisted off. The nitric acid was then applied. The pain occasioned was inconsiderable. Some slight bleeding continued for an hour or two.

6th. A thick wire, coated with the nitrate of silver, guided by the finger, was passed into the uterine cavity, and applied to the growth: it caused slight pain, and its application occasioned some sanguineous discharge.

10th. The nitrate of silver was again introduced.

13th. A large piece of slough had been discharged, followed by some blood; discharge had decreased; appetite good; but slept badly at night.

20th. Discharge diminished; she complained of continued

pain in the right iliac fossa, increased by pressure. The pulse was quick and wiry; tongue furred; skin hot and dry.

Hirudines xii. part. dol. affectæ applic.—Postea Catap. Lini.

Julep. Ammon. Acet. c̄ Sp. Æth. Nit. ʒfs. Tinct. Hyoscy. mxx.  
6tis horis.

Dec. Conii fol. injiciend. ter die.

24th. Had experienced great relief from the leeches; still some tenderness on pressure.

28th. Pain had considerably decreased; in every respect improved; discharge much decreased; appetite increased.

Jan. 8th. In all respects better.

Ol. Ricini ʒfs. pro re natâ.

12th. Gradually gaining strength. There was but little pain or tenderness in the abdomen: discharge slight in quantity.

20th. Had menstruated; discharge lasted four days; abdominal pains slight; os uteri less patulous, but it would still admit the end of the finger without difficulty or pain.—The nitrate was again applied, and caused but little pain.

26th. Going on well: discharge from uterus less.—The nitrate of silver again applied.

31st. For the last four days had had some cough, but in all other respects improved.

Linctus Opiat. pro re natâ; et Pergat.

Feb. 7th. The growth in the uterus was now felt to be very small.—The nitrate was again applied.

14th. Had much improved: discharge slight; and at her solicitation she was presented, with instructions to attend as an out-patient.

E. F——, aged 40, an unhealthy, sallow-looking woman, who had been hard worked and hardly fed, was admitted Jan. 21st. Married sixteen years; had had two children, the youngest thirteen years old. Had never miscarried; but her second child was delivered at the seventh month, by the operation of turning. The catamenia appeared at the age of fifteen, and continued regularly until four months before admission. Until the last twelve months she had enjoyed good health; but at this time she began to suffer from aching pains in the region of the uterus, in the loins, and down the thighs, with frequent discharge from the



vagina of red-coloured fluid, often mixed with coagula. These symptoms continued up to the period of her admission. For the previous four months the discharge had been nearly constant, though variable in quantity, free from fœtor, watery, but becoming very red after any fatigue. Her strength had declined, but her appetite was good; her breathing short; and she was incapable of the slightest exertion. There was no cough, but distressing palpitation of the heart; there was no abdominal swelling or tenderness; her bowels were usually costive; micturition was easy, and urine natural. On vaginal examination, a polypoid tumor, of the size of a small orange, was found growing from the cervix uteri: it was soft, nodulated, and very vascular, bleeding upon the slightest touch. The bowels had been freely opened by castor-oil. Ordered

Julep Ammoniac  $\bar{c}$  Tinct. Cinch. C.  $\mathfrak{z}$ i. ter quotidie sumend.

*Jan.* 24th. The tumor was encircled with thick whipcord by means of Gooch's canula. Considerable hæmorrhage took place, and persisted so long that it was deemed prudent to plug the vagina with cotton wool. The catheter was employed to empty the bladder at night and on the following morning, when the plug was removed without a return of the bleeding. The canula came away with a portion of the growth.

27th. There was still a large portion of the growth left. Discharge continued watery and offensive. The tumor was again tied with a thicker piece of cord. Hæmorrhage much less; but the vagina was plugged for the sake of security.

28th. No hæmorrhage after the operation. Urine drawn off; plug removed; discharge copious and offensive.

31st. Cord had been tightened twice; discharge more purulent, not so offensive; bowels open.

*Feb.* 1st. Canula and cord came away this day.

7th. Discharge diminishing, watery, not sanious: she felt better. On vaginal examination, a small nodulated tumor still remained, and felt as if the truncated neck of the polypus had sprouted afresh.

12th. The strong nitric acid was applied to the growth. A little smarting was occasioned at the time, and a little pain afterwards.

22d. The acid had been twice applied : discharge slight, free from colour ; no pain. The growth smaller : through the speculum the surface looked more healthy.

26th. With a pair of probe-pointed curved scissors the projecting peduncle was excised, and to the cut surface the nitrate of silver was freely applied. The portion removed was of the size of a walnut : the bleeding was free, but was readily arrested by plugging the vagina.

28th. Going on well : no pain, and but slight discharge.

*March* 7th. From the last report the nitrate had been applied twice, causing but slight pain.

14th. There was still a portion of the morbid growth, of the size of a walnut, within the os uteri. By means of the curved scissors it was divided close to the uterus. Caustic was freely applied to the bleeding surface. The hæmorrhage, which was more profuse than before, was arrested by the plug.

15th. Going on well ; no bleeding ; had passed her urine without the catheter.

17th. Had slept well ; suffered occasional slight pains in the loins ; bowels regular : pulse rather quick ; tongue moist, but still flabby ; discharge of a pale red colour, but free from fætor.

31st. Complained of some numbness of the extremities, with a tingling sensation when touched. Bowels confined.

*Haust.* Sennæ c̄ Magnes. Sulph. stat. sumend.

*Tinct.* Ferri Sesquichlorid. m xv. ter quotidie ex Inf. Quassia.

7th. This day she left the hospital, with her health much improved, and but little discharge.

The results of the treatment employed in these three cases, in my opinion, afford us encouragement to apply remedial measures, even when we cannot hope to cure. We should endeavour to lessen the bleeding surface, to diminish the quantity of sanguineous and other discharges, to allay pain, and to improve the general health. When a ligature is used for the purpose of destroying the morbid growth, it should be thick, and tightened very gradually ; for if thin, it will cut through the soft and lacerable tumor.

*Polypus, Vesicular.*—M. H——, aged 43, admitted October 20th, 1845; of leuco-phlegmatic habit, dark complexioned, and unmarried. At the age of 15 the catamenia appeared, and recurred regularly up to the period of her admission; but for the three or four preceding months their duration had extended to three or four days beyond the accustomed period. For many years she had had a continued leucorrhœal discharge, latterly profuse, and similar to the white of egg; occasionally coloured, from admixture of blood. She complained of weight and pain in the back, accompanied with a sensation of bearing down. There were frequent calls to void the urine; the secretion was thick and cloudy. There were trembling and weakness of the lower extremities. The bowels regular, and the appetite tolerably good. On a vaginal examination, the canal was found to be lined with an abundant, thick, gluey secretion; the uterus was large and weighty, rather anteverted; the cervix full and tense, studded with enlarged glandulæ; the os uteri was full, tender, and congested, and from its anterior limbus there hung a vesicular glandulous polypus, about the size of a kidney bean. Viewed through the speculum, it was of a dark red colour, differing from the neighbouring parts of the uterus, which were of a brighter red hue.

On October 21st, the patient being placed on her back, a bivalved speculum was introduced and expanded; the polypus was grasped by means of a pair of forceps, and removed by torsion; but little blood was lost. The spot from which it was removed was touched with the nitrate of silver.

Menstruation came on after the removal of the polypus, and continued to the next day.

26th. The spot to which the polypus had been attached was again cauterized: there was some yellow discharge; and the calls to micturate were not so frequent. Ordered,

Decoct. Cinch.  $\bar{c}$  Acid. Nit. dil. ter die sum.

31st. Discharge much less.

A pint of porter daily.—Cont. Med.

Nov. 3d. Discharge had ceased: complained of weight in the loins and back, especially when sitting up in bed.—Perstet.

7th. There was considerable pain in the back, accompa-



nied with a sensation of weight and bearing down. On examination, the uterus was found to be congested and weighty, the glandulæ still more prominent than natural.

C. C. lumbis 3viii.; et Pergat.

8th. The cupping gave her much relief.

11th. An examination was again made: the uterus, although smaller, was still heavy, large, and rather tender, especially the anterior limbus. The cupping was ordered to be repeated to the same extent as before.

12th. The cupping gave her great relief; but on the evening of this day the catamenia made their premature appearance, and continued till the 17th.

J. B.—, aged 23, of good stature, light complexion, and healthy appearance. Catamenia appeared at the age of fifteen, and had recurred regularly: at first they were attended with but little pain, although lasting six or seven days; but latterly she had suffered much. She was unmarried, and had filled the office of a domestic servant from an early age: had never been able to endure much fatigue. For about three years she had suffered from palpitation of the heart, easily excited by exertion. She had latterly had a constant pain in the back and left hip, much increased by exercise. For the relief of these she had consulted various medical men; and different means had been tried—medicine, change of air, &c.—but without relief. The bowels were regular; defæcation performed without pain; but there was some uneasiness in micturition. On her admission she complained of pain in the hip and back, rendered easier if she reclined, but easiest if she lay on her back: she felt languid and poorly; had little appetite; complained of thirst, nausea, and headache. On vaginal examination a long, slender, vesicular polypus was found to project through the os uteri, attached to the left and inner side of the cervix: the examining finger was covered with a thick gluey discharge.

On the 28th she was placed on her back, and, by means of a pair of forceps, the polypus was twisted off without trouble. The nitrate of silver was applied to the place of its attachment.

30th. Menstruation made its appearance, attended with pains in the loins and hips, and a feeling of nausea.

Dec. 6th. Catamenia ceased; pains but slight; slight pain after taking food.

Pulv. Rhei ʒfs. Pulv. Calumbæ ʒi. Sodæ Sesqui. exsicc. ʒfs. Jul.

Menthæ ʒviii. fiat mistura, cujus dosis sit ʒi. ter die sumend.

9th. Had a colourless discharge, increased after walking about the ward.

Lot. Alba ter die injiciend.

Dec. Cinch. c̄. Acid. Nit. dil. m. x. Tinct. Cinch. C. ʒi. ter quotid. sumend.

16th. The discharge had gradually disappeared, and her health was good.—Presented.

R. D—, aged 35, of dark complexion, single, had never enjoyed good health; began to menstruate at the age of fifteen, and the periods had recurred every three weeks, the quantity lost being considerable, with attendant pain, more or less, in the back, hips, and thighs. For five years the catamenial periods had returned every fortnight. On admission she complained of considerable pain in the head, attended with giddiness, pain under the left nipple, pain in the loins and lower abdomen of a dull aching character: the pulse was regular; tongue clean; appetite good; bowels regular; micturition free; with constant leucorrhœal discharge. On vaginal examination a small vesicular polypus was found growing from the left side of the os uteri, of a dark red colour; the discharge from the vagina was yellow, thick, and gluey. Soon after the vaginal examination the catamenia made their appearance, and lasted five days. On March 31st the polypus was removed by torsion, and the nitrate of silver applied to the spot whence it had been separated.

April 3d. Slight pain; loss of appetite; tongue moist and clean, but red; bowels regular.

7th. Complained of pain and tenderness over the uterus; pulse quick; skin hot; bowels not open.

Ol. Ricini ʒfs. stat.

Hirudines vi. inf. abdomin.—Postea Catap. Lini.

Inf. Rosæ Comp. ʒvi. c̄ Magnes. Sulph. ʒij. et Sp. Piment. ʒii. ter quotidie.

8th. The leeches gave her much relief: bowels freely opened.

11th. Pain in the abdomen almost gone; headache; bowels open.

13th. On rising in the morning she felt much better, but on using exertion she found the pain return: her tongue was clean; pulse quick; skin moist and cool; bowels regular: catamenia had appeared since the morning.

15th. Catamenial discharge very profuse: she felt low and faint.

17th. Catamenia were still flowing in considerable quantity; pulse small and quick; countenance pale; complained of noise in the head and pain in her left side. Ordered,

Aluminis Sulph. gr. xv. Acid. Sulph. dil. m xv. Infus. Rosæ  
Comp. ʒifs. 6tis horis.

The catamenia ceased on the 20th.

22d. Sat up for a short time.

Quin. Disulph. gr. ii. Mag. Sulph. ʒfs. ter quotidie ex Inf. Rosæ  
Comp. ʒifs.

26th. Much better; strength increasing; bowels open.

28th. Presented.

*Urethra, Vascular Tumor of*—S. H——, aged 67, had been a patient in Petersham Ward, Guy's Hospital, five years previously with some neuralgic symptoms treated by ammonia, quinine, &c., and the topical application of belladonna, and after some weeks' residence left the hospital greatly improved. In early life she had menstruated regularly, but scantily: she was married at the age of thirty-four. After she left Guy's Hospital she followed the employment of a sempstress, but was compelled to relinquish her work from severe pain in the urethra, irritability of bladder, and constant desire to void her urine, which she attempted every five minutes: difficulty, but no pain, was experienced in passing her motions. After the trial of various popular remedies, as well as submitting herself to the care of surgeons, she applied at a dispensary at the west-end of London: there the cause of her sufferings was detected. Her general health was tolerably good, and there was no discharge of any kind at the time of her admission. She had constant calls to void her urine, the passage of which occasioned her great pain, occasionally of a shooting character, extending upwards to the abdomen, outwards to the hips, and backwards to the perinæum. On separating the external labia, a vascular tumor was seen protruding through the meatus urinarius, of a florid red colour,



and about the size of a kidney bean. On minute examination, which was with difficulty permitted, on account of the exquisite sensitiveness of the growth, it was found that it passed some little distance into the urethra, and was so vascular that it bled upon the slightest touch, the suffering occasioned by the examination was considerable.

The patient was placed on her back, and the tumor, with the lining membrane of the urethra attached to it, was removed. The nitrate of silver was then applied, and she was desired to keep the part constantly wetted with white lotion.

*Oct. 18th.* Much pain had followed the operation, and continued all night: the urine had been passed; bowels were costive.

Haust. Sennæ c̄ Magnes. Sulph. statim.

*20th.* Less pain; micturition not so frequent, and pain during the passage of the urine slight.

*22d.* Seat of the growth was again touched with the nitrate.

*25th.* The slough not yet separated. She was ordered to keep a white-wash poultice over the meatus.

*Nov. 1st.* Slough came away, leaving a healthy granulating wound.

*5th.* Could pass her water in a good stream, and without pain: part looking healthy.

*8th.* Granulations sprouting. The nitrate of silver, dissolved in nitric acid, to be applied.

*13th.* The application caused considerable pain; the stream of urine full; the pain in micturition had ceased.

*18th.* Presented.

M. M——, aged 30, a woman of florid complexion, small stature; married eleven years; had one child; labour lingering and difficult, but not terminated with instruments. Menstruated at fourteen, and continued regular up to the previous two years, during which time the discharge gradually lessened, and for the preceding three months had entirely ceased. Soon after her labour she felt a desire frequently to pass her water: afterwards she lost all command over her bladder, the urine flowing constantly. On examination, the labia and pudenda were found to be excoriated by the constantly flowing urine. Through the urethra a large vascular

tumor protruded, of a red colour, of the size of a small cherry, and bleeding on the slightest touch. The vagina was found to be contracted at the top by bands of cicatrices, which crossed in various directions: the vagina was in the form of an obtuse cone, the apex perforated by a small opening, surrounded by a cicatrix of cartilaginous hardness. The vascular growth was removed by means of scissors, and the nitrate of silver freely applied; but the patient, refusing to submit to the treatment advised, was presented.

*Uterus, Chronic Inflammation of.*—S. M. S.—, of fair complexion, enjoyed good health until the appearance of the catamenia at the age of 14: they recurred once a month, and lasted a week, and were accompanied with considerable pain in the back, languor, &c. She was married at 18; had given birth to two children, after severe and trying labours. Three years after the birth of the second child (five years before) she was suddenly seized with violent pains, resembling those of labour: she was bled and leeches with relief, and slowly recovered. Eighteen months after, she had a second attack, and a third two years before admission; for this no depletory measures were employed; but she fancied that an abscess formed, as vaginal examination was followed by a discharge of matter, and immediate relief. Two months before admission, and a week after menstruation, she was suddenly seized with sickness, and discharge both of florid and coagulated blood, lasting a fortnight. She was ordered castor-oil and anodyne injection, as she was suffering great pain. Three weeks before her admission she applied twelve leeches without relief; and only obtained ease by taking full doses of opium.

On her admission she complained of sharp darting pains in the rectum, extending down the thighs; but she experienced no difficulty in defæcation: micturition was performed without either pain or difficulty. For several days she had suffered from rigors, followed by febrile excitement and vomiting. There was headache, aggravated when she assumed the upright position; tongue furred towards its base; bowels open; pulse 102, soft and jerking: complained of pain on pressure over the lower abdomen and groins: the enlarged uterus could be felt above the pubes. On vaginal examination the canal was found plentifully moist-

ened with a muco-purulent discharge: the uterus was seated low in the pelvis; its lips were thick, hot, and indurated: the viscus was heavy, and slight pressure upon any part within reach of the finger, or the raising the organ, caused her considerable pain, especially in the back. The pulsation of the uterine vessels was very palpable to the examining finger. Ordered,

Hirudines viii. inguinibus applic.

Dec. Papav. pro lot. ter die injiciend.

Pil. Conii c̄ Hyd. nocte manequ.

Julep. Mag. c̄ Tinct. Hyoscyami m xv. 6tâ quâque horâ.

Beef-tea and Arrow-root.

*May 7th.* Her pains were less; there was not so much tenderness or discharge; gums slightly tender.—Ordered to omit the morning pill.

14th. In every respect better. In consequence of the tenderness of her mouth the pills were ordered to be taken only every other night.

15th. Not so well: had passed a very restless night; complained of pain in the lower abdomen and loins, increased during micturition; the discharge increased in quantity and density. On examination the uterus was found to be hot, larger, more tender, and its vessels more pulsatory.

C. C. lumbis ad 3viii.; et Perstet in usu Medic.

17th. Pains lessened; some nausea; slept but little; mouth very sore; discharge about the same.

Pulv. Ipecac. Comp. gr. x. omni nocte sum.

Julep. Ammon. Acet. Sp. Æth. Nit. 3fs. Tinct. Hyoscyami m xxv. 6tis horis.

Dec. Papav. O i. c̄ Liq. Plumbi Diacet. 3ii. pro lot. ter die injiciend.

19th. Nausea and vomiting almost constant; other symptoms the same.

Haust. Efferves. c̄ Vin. Opii m v. 4tis horis.

24th. In every respect better; sickness entirely gone.

26th. Still improving. Ordered,

Pot. Iodid. gr. iii. Liq. Pot. m viii. Tinct. Lupuli 3fs. Dec. Cinch. 3xifs. m. ft. haust. ter quotidie sum.

This medicine she continued, with great advantage, until



June 6th, when there was rather a sudden return of the pain in the back and hips. Local depletion was again resorted to with benefit. She resumed the medicine, and persisted with the lotion for a month, and left the hospital well.

M. C——, aged 28, a needlewoman, of fair complexion and dark hair; married; had had four children. The three first labours were easy; the last, which had taken place four weeks before, difficult, lasting thirty hours; and the child, which was born alive, died on the following day. The morning after her confinement she was seized with violent pains across the lower part of the abdomen, for which hot linseed-meal poultices were applied with relief; but this relief was not obtained until a large quantity of fluid and coagulated blood was expelled from the uterus. She mended slowly after this; but did not feel herself so strong when she got up. She then suffered from bearing down, heat in the vagina, with pain in the back and loins, accompanied by a thick, purulent-looking discharge. A week previous to her admission she was compelled to walk a distance of three miles, when all her symptoms became aggravated. On admission she felt a sensation of sinking in the epigastrium, pain in the lower abdomen, loins, hips, and thighs; tenderness upon pressure made over the region of the uterus; some distress and difficulty both in micturition and defæcation, with a constantly-flowing thick discharge from the vagina. Her pulse 110, small and sharp; her tongue coated; she was thirsty; and her urine was scanty and high coloured.

The uterus, examined per vaginam, was found low in the pelvis: it was large and weighty, giving her great pain when pressed by the finger: the glands of the os and cervix were remarkably prominent, and the pulsation of the arteries was most distinct. Ten leeches were ordered to be applied to the lower abdomen, to be followed by a linseed-meal poultice.

Hyd.  $\bar{c}$  Cretâ, gr. iii. Pulv. Ipecac. C. gr. v. omni nocte.

Inf. Rosæ Comp.  $\zeta$ vi. Sp. Piment.  $\zeta$ ii. Magn. Sulph.  $\mathfrak{E}$ ii. ter quotidie.

The breasts, which were still rather tender, and contained milk, were ordered to be strapped with soap plaster.

The application of the leeches gave her great relief; but

they were applied on two other occasions, before the size, weight, and heat of the uterus, and its active circulation, could be reduced. The powder was continued until the gums were slightly affected, when it was repeated every second night, and at last her strength was restored by generous diet and the exhibition of the decoction of bark with quinine.

S. L—, aged 39, a widow, of dark hair, clear complexion, who had just lost her husband, after a marriage of seventeen years, was admitted in December. Menstruation commenced at the age of 13: the discharge recurred regularly, was spare in quantity, pale, and attended with considerable pain. She had given birth to five children; labours natural; the last, ten years before: had never miscarried. Her present illness was of three years' duration, and had commenced with pain in the back, legs, &c.; bearing down, accompanied with a greenish discharge; pain in the abdomen, with tenderness above the pubes; inability to use exertion, and confinement to the recumbent position. These symptoms she attributed to hard work and mental anxiety; and for their relief she applied to a medical man in her neighbourhood; but continuing the same, or perhaps worse, she sought the advice of Dr. J. Blundell, who ordered her leeches and warm baths, and after a time recommended her to Guy's Hospital, where she attended as an out-patient with relief, and afterwards went into the country. Ten months before, she again applied, and was again relieved. Fourteen days before her admission her symptoms became greatly aggravated; and for the relief of these, leeches and blisters were advised by the medical man who visited her at home. On her admission there was great pain in the back and iliac fossæ, extending from the sacrum to the pubes; a sensation of throbbing, especially on the right side; bearing down, accompanied with muco-purulent discharge; tenderness over the lower abdomen; difficulty and distress in evacuating either the bladder or the bowels: the abdomen was large and resonant; bowels confined; tongue moist, clean at the apex, furred at the base; pulse small and weak. On vaginal examination the os uteri was found to be one inch and a half from the external orifice: it was large, weighty, very tender,

indurated, and the vessels pulsated strongly. Ordered,

Hirudines vi. inguini sinistro applic.

Ol. Ricini. ʒvi. stat.

Enema commune horis 6tis.

The leeches bled but indifferently: the bowels not opened.

Mist. Mag. c̄ Mag. Sulph. ʒifs. 4tis horis ad plenas sedes.

Hirudines xii. stat. applic.

12th. Bowels freely relieved; pains had diminished; expressed herself better.

Hyd. c̄ Cretâ gr. iii. Pulv. Ipecac. C. gr. vii. horâ somni sum.

Ol. Ricini ʒfs. mane sum.

15th. The powder and castor-oil brought away great quantities of scybalous fæces. She had still great pain during the passage of the urine, and considerable exertion was required to empty the bladder. Vaginal examination gave her less pain: the uterus was higher in the pelvis, not so tender nor weighty.

17th. Had lost all pain in the inguinal region: there was no vaginal discharge: general appearance improved; bowels moderately relieved.

Mag. Sulph. ʒfs. Inf. Gent. C. ʒifs. m. ft. haust. ter die sum.

20th. Bowels freely relieved; complained of soreness in the abdomen; the vagina more lax; uterus smaller, and less tender.

24th. Had a repetition of the rigors she had so frequently experienced before her admission; shooting pains in the situation of the uterus; pulse rather accelerated; bowels confined.

Ol. Ricini, ʒvi. stat.

Pil. Conii c̄ Hyd. omni nocte sumend; et Pergat.

26th. Considerable pain and tenderness in the groin.

Hirudines vi. stat. applic.—Pergat.

31st. Menstruation had continued for three days.

Jan. 4th. Some pain still continued in the uterine organ, more aching than throbbing; no rigors; bowels open.

21st. Was now pretty well. Uterine pains less constant and violent. The vaginal walls more firm, not so baggy or loose; the uterus free from tenderness, not so hot or weighty, and its vessels did not give that distinct pulsating sensation to the examining finger.



*Uterus, Congestion of.* — J. G——, aged 41, a spare, sickly-looking woman, married five years, who had never been pregnant. Catamenia appeared when she was 20, and were attended with considerable constitutional disturbance: they continued to return regularly, but scantily, and accompanied with much pain. Her general health was always delicate, but rendered worse by marriage. About two years previously she began to suffer from frequent nausea and vomiting, pain in epigastrium, and obstinate constipation. For these symptoms, mercury, purgatives, &c. were prescribed, but without relief. She then “physicked” herself with purgatives for six months. These greatly reduced her strength, but without relieving her symptoms. After this she was treated by a surgeon for stricture of the rectum, and a bougie was passed every other day for a very long time. For the last twelve months this had been discontinued, and she had been taking tonics and stimulants, and regulating her bowels with castor-oil and enemata. The fæces were thickened, flattened, and passed with much pain; micturition occasionally difficult; urine variable in quantity. Of late she had suffered much from pain in the head; for some months she had been confined to her room, and had lost flesh. There were, on admission, severe neuralgic pains in the abdomen, brought on by any excitement, or by the slightest pressure. There was a white leucorrhœal discharge. Examined “per vaginam,” the uterus was found to be large, congested, highly irritable, and prolapsed so as to cause considerable pressure on the rectum; the finger, passed into the bowel, found its calibre considerably lessened by the antecumbent uterus. The examination induced a fit of hysteria.

C. C. sacro ad 3̄viii.

Fotus Conii fol. pro lot. ter die injiciend.

Mist. Mag. c̄ Mag. Sulph. 3̄ii. omni mane sum.

Pil. Gent. c̄ Zinco ter quotidie.

27th. Less neuralgic tenderness; uterus not so large nor so irritable on examination; bowels irregular; no sleep at night.

Augeat. Zinci Sulph. ad gr. ii. ter quotidie.

Ext. Hyoscyami, Camph. āā gr. v. omni nocte sum.

She began to menstruate on the 30th.

*Feb.* 7th. Decidedly better; appetite improved; ate meat this day for the first time. Was taking four grains of the sulphate of zinc in each pill.

15th. Much better; uterus less; could now bear considerable pressure, if made steadily.

Augeat. Zinci Sulph. ad gr. v. in sing. pil.

22d. Slowly improving: had been able to get up and walk once or twice across the ward with assistance.

25th. The zinc was increased to six grains.

26th. She was more hysterical and nervous, but attributed this to commencing menstruation.

*March* 2d. Her spirits were better, but she complained of considerable pain over the abdomen, coming round to the back.

Emp. Belladonnæ abdomini imponend.

Aug. Zinci Sulph. ad gr. vii. in sing. dos.

12th. Dr. Oldfield, the Clinical Clerk, was called to her this morning, and found her vainly endeavouring to pass her urine: she had been sitting on the bed-pan for some time. On the introduction of a catheter a very small quantity was abstracted.

16th. The uterus much less in size, and less painful; motions passed without difficulty, and figured; but she still complained of occasional neuralgic pains in the abdomen when excited. Having friends in the country she was desirous to visit them, and for that purpose she left the hospital.

J. B—, admitted April 15th; a woman of moderate height, rather stout, aged 27, and occupied as a nurse. As a girl she always enjoyed good health. The catamenia first appeared at 14, when she suffered great pain and uneasiness: these continued until she was of the age of 18, when the catamenial flux increased. From this time the monthly discharges returned with regularity, and in proper quantity. About fifteen months before admission she was laid up with pain in the stomach and loins, occurring every three or four hours, and lasting for some days. At the same time she had spitting of blood, with pain in the chest, and sickness. These symptoms persisted for three months. About three weeks before admission she was attacked with sickness and pain in

the chest, which were soon followed by pain in the region of the uterus, extending on either side to the crest of the ilium. This was attended with a sensation of bearing down, but no leucorrhœa, pain in micturition, and dysuria. On admission, her countenance was flushed; pupils dilated; tongue furred at the base, red at the apex; there were great restlessness, headache, nausea, with occasional vomiting of dark grumous matter; her skin was moderately cool; breathing hurried; pain, with a sensation of weight, in the region of the uterus, and shooting into the vagina. Nothing abnormal was detected in the chest by auscultation and percussion. The abdomen, when percussed, returned full resonance in the usual situations. On vaginal examination the uterus was found to be prolapsed, large, weighty, and congested: when inspected through the speculum, it was free from all ulceration, but of a dark-red colour.

C. C. lumbis ad  $\bar{3}$ viii.—Ol. Ricini  $\bar{3}$ i. stat.

The cupping gave her great relief; bowels freely opened.

20th. Was considerably better; could sit up in bed without feeling the sensation of weight and bearing down.

On the 27th she could walk about the ward, and on the 28th was presented.

S. B—, aged 22, unmarried, with dark hair, pale, and anæmiated; admitted into Petersham Ward in September, two months after giving birth to a male child. Menstruation commenced at the age of 15. When 16 years of age, while at the sea-side, she got her feet wet: this induced a severe cold, and was attended with a protracted attack of flooding. The following year she suffered from a similar attack, and from the same cause, but during the interval was in every respect tolerably well. For some years she suffered from leucorrhœa, and in the preceding October contracted gonorrhœa, for which cubebs, copaiba, &c. were prescribed, and astringents were injected, but without cure. Her labour was tolerably easy. On admission her face was pale; eyes bright, surrounded with dark areolæ; tongue pale, and indented on the edges; respiration normal; pulse small and quick; abdomen rather tympanitic, free from tenderness in every part, with the exception of the uterine and ovarian regions. She complained of pain in micturition, with difficulty



and pain in defæcation. There was a sensation of dragging behind the pubes. Occasionally there were paroxysms of pain commencing at the uterus and darting outwards to the crista ilii, but not extending down the thighs. The mammæ were large, full, and distended with milk (the child was left with her mother). Examination per vaginam found the canal lubricated with a copious muco-purulent secretion; the urethra large, swollen, and tender; the uterus large, its size much greater than is usually found two months after delivery, its neck tense; the lips of the os thick and tender, with the glandulæ Nabothi prominent. On the upper part of the vagina pressure on either side gave excessive pain; and in this situation an indistinct fulness was found: the mobility of the viscus was diminished. The finger, passed "per rectum," detected the calibre of the intestine to be diminished by the pressure and size of the enlarged womb.

Hirud. xii. abdomin. inf. applic.

Ol. Ricini, ʒss. cras mane sum.

The breasts to be strapped with soap plaster.

11th. The leeches relieved the pain. The milk having diminished, she felt much better.

Liq. Plumbi Diacet. ʒij. Dec. Papav. O i. pro lot. ter die injic.

Mist. Gent. C. ʒifs. ter die sumend.

15th. The pain was still very violent. There was yet fulness and tenderness, and the discharge was very abundant.

Hirudines xii. rep.

Hyd. c̄ Cretâ, gr. iii. Pulv. Ipecac. C. gr. v. omni nocte; et P.

21st. Vaginal examination detected the size of the uterus to be considerably reduced: the womb less tender when pressed by the examining finger: the pains still recurred in paroxysms, but were comparatively slight, and of short duration.

On the 25th she had considerably improved: the pulse was small and weak. She was ordered,

Acid. Nit. dil. m x. Tinct. Cinch. C. ʒi. Dec. Cinch. ʒx. m. ft. haust. ter quotidie sumend.

29th. The discharge had increased, yellow and puriform, but assuming different colours at different times.

Oct. 5th. Complained of pain in the back and groins. She

fancied that this increase of pain was precursory of menstruation, a month having elapsed since she weaned her child.

10th. Pain diminished, but the catamenia had not appeared.

15th. The uterus was soft and flabby; the os spongy and patulous; and the whole of the vaginal portion of the uterus was doughy, though tender.

19th. There was more pain in the groin and back, and the discharge was more thick.

Hirud. viii. abd. inf. et inguinibus applic.

Hyd.  $\bar{c}$  Cretâ, gr. ij. Pulv. Ipecac. C. gr. iii. ft. pil. omni nocte sumend.

Mist. Gent. C.  $\bar{z}$ ifs. ter quotidie.

21st. The leeches did not bleed freely, and the pains were not relieved. Bowels very much relaxed, and considerable pain preceded and accompanied their action.

Syr. Ferri Iodid.  $\bar{z}$ i. ter quotidie ex Dec. Cinch.

25th. There was still considerable pain in the groins and back, and the discharge was profuse and semi-purulent. The uterus was diminished in size; and the posterior part of the cervix congested, and tender to the touch. This was scarified, with relief, although she complained of the pain caused by the operation.

29th. Posterior part of the cervix still tender; and as she suffered so much from the introduction of the speculum she was ordered to be cupped on the loins to ten ounces, which she afterwards affirmed had given her greater relief than either the scarification or the leeches.

*Nov.* 4th. Greatly improved in strength: still complained of pain in her left groin, which, on examination, was found to arise from an inflamed gland. Gums slightly affected.

Omit. Pulv.—Perstet in usu Mist.

7th. For the last twenty-four hours she had had symptoms which she said usually preceded menstruation, but as yet the discharge had not appeared. She was ordered a hip-bath.

11th. Menstruation had not appeared, although the pain in her back continued. The leucorrhœal discharge more profuse.

13th. She complained of great pain in micturition: the

urethra swollen, especially the posterior lip of the meatus: its lining membrane was excoriated, and very sensitive. To this the nitrate of silver was applied. There was appearance of blood in the discharge. The urethra was scarified.

17th. No return of blood: much pain in micturition; and the urethra still swollen and painful: the discharge continued thick and viscid: there was some irritability of the bladder: the calls to void the urine frequent. The scarification of the urethra was repeated, and with benefit.

*Dec. Conii fol. ter die tepid injiciend.*

22d. Pain in the back increased: blood occasionally voided with the discharge. A small speculum was passed, and ulceration found on the anterior lip of the os uteri. To this the nitrate of silver was applied.

24th. Improved in every respect. Discharge less: ulceration healing.

*Dec. 4th.* There was considerable pain in the back, accompanied with bearing down. There was slight appearance of the catamenia, which were dark, and mixed with coagula.

5th. Menstruation proceeding, although sparingly. All her symptoms relieved.

9th. Catamenia more plentiful, and (she said) attended with less pain than before her pregnancy.

16th. Nearly free from pain.

*Jan. 4th.* Complained of pain if she stood long in the erect posture.—The nitrate of silver was repeated.

13th. Ulceration much improved. Presented, to attend as an out-patient. She continued under my care for some weeks, continuing her tonics, and persisting with the application of the nitrate until the ulceration had healed. Her health is now good, and she is filling a respectable situation.

E. R—, aged 35, a woman of moderate stature, pale, with dark hair and eyes; admitted June 30th, 1846. Her catamenia appeared at 16, and were painless: married, and had given birth to one child seven years before. About five years afterwards she was under my care as an out-patient with very similar symptoms. She recovered, and went to Manchester, where she spent fifteen months working in the manufactories. Seven months previously she returned to London. Three months before had a renewal of her symptoms, and



again applied as an out-patient. For a fortnight she was unable to attend the hospital. She complained of heat and pain in the lower abdomen, especially on the right side; pain in the loins, extending to the uterus, and occasionally down the vagina. There was a slimy yellow discharge; the catamenia regular; sexual intercourse at times painful; there was no pain either in defæcation or micturition, but a small quantity of urine only was passed at a time, and that frequently; the pulse small, 100; some nausea, and occasional vomiting.

On vaginal examination the uterus was found to be enlarged, seated low in the pelvis, and rather anteverted, in some degree diminishing the capacity of the bladder. No ulceration could be detected. The recumbent position, topical bloodletting, mercurial alteratives and tonics, sufficed to effect a cure.

*Uterus, Corroding Ulcer of.*—M. P——, aged 55; of moderate stature. Catamenia appeared at the age of 16, were painless, and ceased at 40. Married at 20: had given birth to six children, and had had three miscarriages; the last twenty-three years before. In July 1845 was taken with a violent pain in the abdomen, like cramp, recurring at intervals for a fortnight, and followed by pain and giddiness in the head, with pains in the abdomen like labour pains, attended with a thick yellow discharge gushing in considerable quantities from the vagina. From this period the discharge recurred at intervals of a fortnight. There was no pain on defæcation or micturition. There was nausea, but no vomiting. She suffered from cramp down the thighs, and occasional palpitation of the heart. Bowels rather costive.

There was pain over the symphysis pubis and tenderness over the abdomen, with pain in the groins and back. The pulse weak, 80; tongue brown; considerable thirst. On examination the vagina was found very capacious; the uterus was affected with corroding ulcer, which had destroyed more of the left than of the right side of the cervix.

*Jan. 16th.* The strong nitric acid was applied through the glass speculum to the ulcerated surface. The patient was ordered,

Jul. Ammoniā c̄ Tinct. Cinch. C. ʒi. ter quotidie.

18th. The discharge had ceased after the application of the nitric acid, but she suffered from a slight aching pain in the left groin.

20th. The nitric acid again applied to-day ; its application was less painful at the time, but caused more pain afterwards.

25th. Last night there was a discharge of about three ounces of sanguino-purulent fluid. The nitric acid was applied, for the third time, to-day : the surface of the ulcer presented a more healthy appearance.

30th. The discharge to-day again slightly coloured. She complained of a darting pain from the left groin through the back and hip. The nitric acid was again applied. In one place the slough occasioned by the last application had not separated, but the remainder of the surface looked more healthy.

Still under treatment.

*Uterus, Fibrous Tumor of.*—F. H——, aged 54 ; a woman of dark complexion ; married twenty-six years ; no children. Menstruation commenced at the age of 15, and continued to appear regularly up to the period of her marriage. She had noticed for about four years that the catamenial flux was greater in quantity, and that its duration was longer : the discharge was occasionally mixed with large coagula. For the six months previous to her admission there had been a profuse watery discharge between the menstrual periods. Before the discharge of the coagula she experienced considerable pain, but this was invariably relieved by their expulsion. During menstruation there were central pains, commencing in the pelvis and extending to the loins, hips, and thighs ; her face was pale and anæmiated ; her extremities cold ; respiration quickened on the slightest exertion ; pain and weight at the top of the head ; noise in the ears ; the tongue pale, and its edges indented ; she felt oppressed after taking food. On placing the hand upon the abdomen, a tumor was found at its lower part, of the size of a four-months' pregnant uterus. That this was the uterus itself was proved by an examination conducted "per vaginam." This viscus possessed its usual mobility. The os was small, and with difficulty permitted the introduction of the sound, which was passed up behind the fibrous growth, and shewed considerable increase in the length of the cavity. By

means of the sound, the uterus, and with it the tumor, could be moved in any direction. Ordered, on September 11th,

Decoct. Cinch.  $\mathfrak{z}$ iss.  $\bar{c}$  Acid. Nit. dil. m $\times$ . ter quotidie.

Ferri Sulph.  $\mathfrak{z}$ i. Aquæ distillatæ O i. m. ft. lot. ter die injiciend.

17th. Discharge free from colour, and less in quantity.

20th. General health improved: discharge colourless, but greater: bowels constipated.

Ol. Ricini  $\mathfrak{z}$  fs.—Perstet in usu lot. add. Ferri Sulph.  $\mathfrak{z}$  fs.

25th. Complained very much of pain situated directly above the pubes and in the back: the discharge less in quantity, but coloured.

29th. Pain increased; the left leg and foot swollen, and rendered almost powerless from pain extending in the direction of the anterior crural and sciatic nerves; discharge profuse and coloured.

30th. Pains relieved by the discharge of some considerable coagula.

Oct. 3d. Discharge small in quantity: general health much improved.

18th. Pain less: discharge not so great; countenance improved; more colour in her face; appetite good, being able to eat without feeling oppressed or distressed; bowels regular. Having an opportunity of spending a few weeks in the country, she was presented.

E. W.—, aged 30; married three years; never pregnant: general health good up to the time of her marriage. Catamenia appeared at the age of 11, natural in quantity and colour. Had been much exposed to cold, wet, and night air, being a vocalist. She was a woman of rather robust habit; countenance pale, with a somewhat anxious expression; the pupils dilated; tongue clean and moist; pulse small, feeble, and irritable; bowels irregular in their action; appetite small; great despondency; hurried respiration, and palpitation of the heart on using exertion. She had lived hardly, her husband and herself depending entirely on her precarious engagements. She first applied to me shortly after her marriage, complaining of the discharge of coagula at the period of menstruation, which lasted a fortnight, and was succeeded by a white thin discharge. I at that time detected a fibrous



tumor, developed on the anterior and left side of the body of the uterus. Means were at that time taken to improve the general health and to diminish the discharge. From that time up to the period of her admission she occasionally presented herself before me; but finding herself much weaker, and the discharge increasing in quantity and duration, she applied to be admitted into the hospital. On an abdominal examination resonance was returned to the percussing fingers in the usual situation, with the exception of the middle and left of the lower abdomen: there palpation detected a tumor, firm and resisting, but moving readily from side to side. The tumor was not regular in its outline, but appeared to be nodular on its left side. The finger passed into the vagina detected the os uteri high up, but directed to the left angle of the vagina: it was small, and with great difficulty, and not without some manipulation, admitted the uterine sound, which passed behind the tumor, upwards and to the right. When this instrument was in the uterus this viscus could be moved in any direction. Examining the cavity of the uterus, it gave me the impression that one or more rounded bodies were protruding and distending its cavity. Menstruation came on soon after her admission: the discharge was of a florid colour, very profuse, and, towards its decline, several large coagula were expelled, which were formed as if moulded on a convex surface. To restrain the hæmorrhage, she was ordered,

Acid. Gallici gr. viii. Tinct. Hyoscy. m xx. 6tis horis ex Mist.  
Camph. ʒ ifs.

This medicine, whenever taken, diminished the quantity of the discharge, and lessened the number of days of its persistence. In the intervals she took, with benefit, the following draught—

Tinct. Ferri Sesquichlorid. m xv. Tinct. Lupuli ʒ fs. ter quotidie  
ex Inf. Quassia ʒ ifs.

This plan of treatment she continued during a residence in the hospital of nearly three months; and when she left had considerably improved in appearance. She now occasionally presents herself, and takes the same tonics in the intervals of menstruation, and during the flow the following draught—

Aluminis Sulph. gr. xii. Acid. Sulph. dil. m x. Tinct. Hyos. m xx.  
6tis horis ex Inf. Rosæ C.

Her appetite and spirits are good, and she is now engaged as a vocalist at some place of public entertainment; and although the pittance derived therefrom is small, yet she is compelled to make that suffice for the support of herself and her husband, who is delicate, and unable to contribute to their maintenance.

J. R——, aged 35, a woman of light hair and fair complexion; admitted Dec. 23d; a widow, and had never been pregnant. She began to menstruate at the age of 16, and her catamenial functions were performed with tolerable regularity. She lived well, and of late had filled the office of nurse. Her present illness, of twelve months' duration, commenced with pain above the left inguinal region, accompanied with a constant sensation of sinking and faintness, always aggravated at the monthly periods. Medicines were prescribed and leeches applied with but little benefit. In March last she first detected a swelling in the lower and left side of the abdomen, which gradually increased until October; and from that month until the period of her admission its increase was rapid. In the previous month, after great exertion, she had a copious discharge of blood, which lasted for twenty-four hours, and was arrested by medicine.

Her appearance on admission was tolerably healthy; her respiration regular; her pulse tranquil; and her appetite good. The abdomen was enlarged by a swelling, extending from its lower part some distance above the umbilicus: percussion returned a dull sound over the tumor, but a clear sound in the region of the transverse arch of the colon above the tumor, which was firm and moveable. It appeared to be harder and more defined on the left side, although the right seemed to protrude more than the left. A strong impulse was given to the tumor by the pulsation of the aorta. After walking or standing her legs swelled, the right more than the left; her bowels were confined, and seldom acted unless she took aperient medicines; there was dragging pain in the back, increased on assuming the erect posture; pain in the thighs; tongue moist and clean; secretions natural;

pulse 70, regular, and of good volume. The finger, introduced into the vagina, detected nothing abnormal in that canal: os uteri was seated high up, and was directed backwards, but free from disease: the movements of the former, caused by the hand laid upon the abdomen, were communicated to the os uteri, and *vice versâ*. The uterine sound was without difficulty passed into the uterine cavity, to the extent of nearly seven inches and a half: it could not be moved freely in the cavity; and when the handle was depressed its bulbous extremity could not be felt, but the tumor was pressed forwards against the abdominal walls. The mammæ were small and flat, and the nipple small. The circumference of the abdomen at the umbilicus was thirty-five inches; from the umbilicus to the anterior and superior spinous process of the right side she measured eight inches and a half: from the umbilicus to the anterior and superior spinous process of the left side eight inches: midway below pubes and umbilicus from anterior and superior spinous process fifteen inches. Ordered,

Pil. Galb. C. gr. v. omni nocte.

18th. Bowels opened well, which afforded her relief: incontinence of urine in the erect posture: measured around the umbilicus thirty-four inches.

20th. The catamenia appeared on the 19th, very free, but highly offensive; and on the next day she was ordered,

Julep. Rosæ C. ter quotidie.

Jan. 8th. Considerable œdema of the right leg; the veins varicose and tortuous; tenderness on pressure in one spot. Ordered to keep on her bed. The abdominal tumor caused less distress when she lay on her left side.

16th. Tumor more prominent, and larger; increased difficulty in breathing; frequent bearing-down pains. On vaginal examination, os uteri seated high up; the anterior lip had almost disappeared; the posterior very thin, cervix much stretched, as if by some large distending body within; os uteri as large as a dollar: just within is felt a tense but soft spongy body, giving to the finger the sensation of a presenting placenta. The discharge watery, not copious, but fœtid, and, after exertion, sanguinolent.

18th. Uterus again examined, and no difference detected.



The discharge watery. The tumor appeared to have sunk more deeply into the pelvic cavity, and in front was less prominent: her general symptoms had improved, her pains were less, and she slept better. For some days she had been taking the following medicine—

Dec. Cinch. ʒxi. Tinct. Cinch. C. ʒi. Acid. Sulph. dil. m. x. ft.  
haust ter quotidie st.

24th. Uterus and tumor had descended lower: cervix more tense.

31st. Anterior lip thick and spongy; posterior lip thin and tense.

*Feb.* 7th. Discharge more in quantity, watery, and offensive: uterine sound passed into the cavity of the womb behind the tumor to the height of  $7\frac{3}{4}$  inches.

14th. For the last week the aching pains in the back and sharp cutting pain on the left side of the tumor had increased, but without any change in its external form or feel. The cervix, on examination, was found to be more distended, and the anterior lip not to be distinctly made out, from the tumor descending from within the cavity.

22d. No difference in general or local symptoms.

*March* 7th. For a few days she had had considerable pain in the lower part of the uterus; somewhat relieved by a discharge of blood flowing during defæcation.

14th. Small quantities of blood passed during micturition and defæcation up till this day.

On the 29th, her bowels being confined, she took some opening medicine; which acted freely; and in the evening she was attacked with chilliness, lasting for some time, followed by heat of skin and great restlessness. In the morning there was a pungent burning heat of the surface, especially over the abdomen and chest; slight cough; hurried respiration; quick pulse; tongue red at the edges, dry and brown in the centre; some tenderness over the region of the tumor; a slight roughness in the vesicular murmur detected on the right side of the chest; countenance anxious; frequent sickness.

Mist. Salin. Efferves. 4tâ quâque horâ sum.

31st. Had passed a very easy night, having slept well: skin not so hot; cough frequent, short, and dry; respiration less hurried; pulse not so frequent; tongue moist and white;

bowels opened once. Complained of a dull pain, at every inspiration, under the sternum.

9 P.M. No pungent heat of the skin; pulse quick; tongue dry; considerable difficulty in breathing; crepitation heard at the inferior and posterior portion of the right chest.

C. C. thoraci ad  $\text{℥viii}$ .

Ant. Pot. Tart. gr.  $\frac{1}{4}$ . Opii gr.  $\frac{1}{2}$ . Hyd. Chlorid. gr. i. in formâ pilulæ 4tis horis.

*April* 1st. Heat of skin less: still difficulty in breathing; expectoration slight, but of a darkish-brown colour; crepitation still to be heard; pulse small and quick; bowels open.

Perstet.—Emp. Cantharid. post. thorac. dext. applic.

2d. Blister rose well: respiration much more easy and tranquil; had had several hours' sleep; bowels opened three times; considerable thirst; pain in the head. In the afternoon bleeding from the vagina came on: one large clot was expelled, and for some time there was continued oozing; the cough was less frequent, and she complained less of the pain and dyspnœa.

3d. Hæmorrhage having ceased she expressed herself better; the skin moist and perspirable; cough less oppressive; some nausea and sickness. In the afternoon diarrhœa supervened, but was checked by the mist. cret. c. c. conf. aromat. et vin opii.

4th. Diarrhœa again returned, and with it the vaginal hæmorrhage: very low and faint; pulse small and quick.

Brandy and arrow-root occasionally.

Enema Amyli  $\text{℥ij}$ . c. Liq. Opii Sed. m xx. stat. injiciend.

5th. A return of bleeding this morning to such an extent that the tampon was employed, and brandy given freely.

6th. The pain returned in the side, accompanied with a short cough; the pulse scarcely to be felt; lips pallid; eyes filmy. A mustard poultice was applied to the seat of pain, and with relief; bowels opened once; no return of hæmorrhage.

Ammon. Sesquicarb. gr. v. 4tis horis ex Inf. Serpent. C.

7th. In the morning was suffering from pain in the epigastrium; pulse hardly perceptible; body covered with a cold clammy perspiration; bowels opened once; urine free; no return of hæmorrhage; pain and general soreness of lower extremities. From this time she gradually sank until six o'clock in the evening, when she died.

SECTIO CADAVERIS, BY DR. GULL, EIGHTEEN HOURS AFTER DEATH.

**Lungs.**—Inflammatory œdema of both lungs, especially in the right, into the middle and inferior lobes posteriorly, the tissue breaking down readily on pressure. Pleuritic effusion on both sides, particularly the left: clear straw-coloured serum.

**Heart.**—Healthy effusion of serum into the pericardium.

**Liver.**—Healthy.

**Kidneys.**—Pelves and ureters dilated; weight of both kidneys thirteen ounces; tunics readily stripped off; surface of kidneys pale, but uniformly smooth.

Uterus drawn up and stretched, its cavity equalling eight inches in length. Occupying the anterior wall of the uterus, and thus dilating its cavity, was a large tumor, weighing  $12\frac{1}{2}$  pounds. On making a section of it, it was found to be made up of numerous smaller growths, having a concentric laminated arrangement. The general structure of the tumor was white, firm, and, when examined by the microscope, exhibited a fibrous character. It would perhaps be impossible to determine whether each fibre possessed a nucleus, as shewn in the diagram (Plate II. fig. 3): many of them, however, did. Amongst the general white fibrous structure was a part of a yellowish colour: this differed from the preceding only in the manner depicted in the diagram. The centre of the tumor was cellular from long angular cells, with vascular flocculent angular walls. The microscopical appearance of this latter part is also shewn in the diagram. If, as physiology teaches, the simple form of a structure is a cell, whether nucleated or not; and that in the process of development the cell-walls may lengthen out and become fusiform, giving rise, in this manner, to the elements of the areolar tissue; we should expect to find the parts of a slow growth to have the form shewn in Plate III. Fig. 3 at *a*. *b*. would be regarded as varying only in having cells of a different kind from the ordinary fusiform ones, or, if similar, less developed; the soft part is shewn from its colour to be much more vascular than the rest: and hence, here we should expect to find the cells hurried in their development, the rapidity giving no time for the development of the well-marked fusiform cells of the other parts of the tumor.



E. P—, aged 36, a woman of florid complexion and good stature. The catamenia appeared at 16, and were regular for ten years, but came on at uncertain intervals; and for the next ten were painful. Married, and had one child and two abortions. Two years back felt pain above the right groin, extending to the back and pubes: at first no vaginal discharge, but latterly it was profuse and white after the cessation of the catamenia. Ten days previously to her admission, during exertion, she found something protrude through the external parts: this caused her so much pain that she fainted. On examination, a tumor of the size of an orange could be felt in the anterior wall of the uterus, which was slightly prolapsed. She complained of pain in the pubes and back, which was diminished when she maintained the recumbent position.

10th. Catamenia appeared this morning, profuse, and attended with considerable pain.

C. C. lumbis ad 3x.

Julep. Rosæ C. ter quotidie sum.

17th. Catamenia ceased, and she stated she had not been so free from pain for some time.

24th. Health much improved: womb still descends. She was recommended to wear an uterine abdominal supporter.

M. R—, aged 38, short and stout, sallow and anæmiated. Catamenia appeared at the age of 13: the menstrual periods had been regular, but attended with pain. Married at 24, but never pregnant. Shortly before her marriage she struck herself in the left groin against the corner of a chest of drawers: tenderness followed, but there was no swelling; and after a few days' residence in Guy's Hospital she got well; but she ever afterwards experienced pain during her menstrual periods in the left iliac fossa, the discharge lasting for nine or ten days, and attended with the frequent passage of coagula. For the preceding four or five years she had not been free from coloured discharge, the menstrual periods being known only by the aggravation of the pain and the increase of the flow. For several months she had been all but confined to her bed. Frequent vomiting: micturition frequent and painful; urine moderate in quantity, depositing a white sediment. There was a morbid sensitiveness over

the whole abdomen. She complained much of the pain and tenderness in the left iliac fossa and above the pubes, the slightest pressure by the hand causing her to shriek. The tongue had a dry white coating, and was fissured longitudinally: her pulse was 110, quick and small. For the last fortnight the discharge had been less in quantity (she had previously been cupped). Examination "per vaginam" detected the uterus enlarged. The os was small, and with difficulty admitted the uterine sound, which detected increase in the length of the cavity; and by its aid a hard resisting tumor could be felt attached to the upper part of the anterior wall of the womb. The examination was followed by an increase of sanguineous discharge. Ordered,

Alumin. Sulph. gr. xv. Acid. Sulph. dil. m x. Tinct. Lupuli ʒfs.  
Inf. Rosæ C. ʒifs. m. ft. haust. ter quotidie sum.

May 8th. Discharge less; pain and tenderness; weight and oppression after taking food: bowels rather confined; abdomen distended with flatus.

Pulv. Rhei ʒfs. Pulv. Calumbæ ʒi. Sodæ Sesquic. exsiccatae ʒfs.  
Jul. Menthæ ʒviii. ft. mist., cujus dosis sit ʒi. ter quotidie sum.

11th. The pain and tenderness in the left groin and above the pubes continued: the red discharge had returned.

Hirudin. viii. part. dol. applic.; et Pergat.

15th. Much relieved by the leeches: less pain, but still some tenderness.

Hirudin. viii. applic.; et Pergat.

19th. Improved in every respect: no pain, but shrieked when pressure was made either on the groin or over the uterus.—To repeat the application of the leeches.

30th. Red discharge came on, and with it pain in the same situation as before. Leeches were again applied, but not with the relief she had before experienced, until the expulsion of several coagula.

June 9th. Had repeated the leeches, and appeared now free from pain. At her own earnest request she was presented, to attend as an out-patient.

*Uterus, Fungoid Disease of.*—Six cases of this dire disease have been admitted; although they are returned in the table as relieved, and during their residence in the hospital were improved in their general health, and had their local sym-

ptoms relieved, yet the extent to which the mischief had advanced before they applied for assistance dispelled all hope of total eradication. In some cases the disease had advanced very far without the patient having felt any particular pain, or without any suspicion of the grave nature of her malady. This, doubtless, is due to the sparing sensibility of the cervix, the part whence fungoid disease usually springs. It will be unnecessary to give more than a brief summary of each case.

C. B—, aged 26; fair complexion; married seven years, but never pregnant. Catamenia appeared at the age of 15, regular for four years, but scanty. Four months previously to admission had a sudden attack of hæmorrhage: which recurred daily, especially on exertion, and was occasionally mixed with coagula. Central pains, extending to the back and thighs. Micturition and defæcation difficult. Uterus large, situated deeply in the pelvis, and fixed. From the anterior part of the cervix a large fungoid mass protruded. On admission, discharge copious, watery, and fætid. But little sleep. A sponge, soaked in lot. sod. chlorin., ordered to be introduced into the vagina.

Morphiæ Acet. gr.  $\frac{1}{8}$ . omni nocte pro re natâ; urg. dol.

Ammon. Sesq. gr. v. Tinct. Conii ʒi. Mist. Camph. ʒxi. ft. haust. ter die sum.

E. E—, aged 35; fair complexion; pale; exsanguine. Catamenia commenced at the age of 12, regular, and free from pain. Married at 15, miscarried four months afterwards: and a second miscarriage in ten months. She afterwards gave birth to a living child, but was regular up to the time of quickening. At the age of 19 she lost her husband, and remained a widow for fourteen years: she then married again, and in three years was delivered of a living male child, which she nursed for two years, until within four months of her admission. Twelve months before, she experienced forcing pains in the abdomen, especially when the child was sucking: these recurred up to the period of weaning, when severe hæmorrhage supervened. This discharge recurred at irregular intervals up to the period of her admission. The uterus, enlarged, could be felt through the abdominal parietes, and from the inner surface of the right



side of the cervix there sprouted an irregular fungoid growth, bleeding on the slightest touch. Slept well, and pains were moderate.

Acid. Nit. per speculum vitreum applic. 3tâ quâque aurora.

Lot. Sod. Chlorin. Ammon. Sesq. gr. v. ter quotidie ex  
Dec. Cinch.

This plan she continued for some weeks, when she left the hospital improved in health: at the same time the growth was reduced in size, looked more healthy, and the discharge was diminished in quantity, being more purulent than watery.

E. P——, aged 46; a laundress; dark complexion; married at 20; four children; easy labours. Catamenia appeared at the age of 16, regular and copious. Twelve months before, first attacked with sudden hæmorrhage, recurring at irregular intervals. During the succeeding month numerous coagula were expelled: was placed under medical care; and continued well until within three months, when she suffered from a similar attack, which continued up to the period of her admission. A large, irregular, fungoid mass was found to arise from the inner surface of the anterior, posterior, and right side of the cervix; the uterus was large, and fixed in the pelvis; her pains were great, especially at night; discharge copious, fœtid, and watery.

Morphiæ Ant. gr.  $\frac{1}{2}$  omni nocte sum.

Lot. Sod. Chlorin. Sp. Ammon. Arom. m xv. ter quotidie ex  
Dec. Cinch.

Port Wine  $\zeta$ iv.

M. M——, aged 35; light complexion; married at 23. Catamenia commenced at the age of 15, regular until within sixteen months. Miscarried twelve years before, being three months advanced in pregnancy: afterwards gave birth to three children in three successive years. She miscarried a second time in the second month of utero-gestation, and afterwards bore three more children. Her illness dated two months back, when there supervened a copious leucorrhœal discharge, with symptoms of dyspepsia, loss of appetite, wasting, &c. Now suffered from nausea, vomiting, and thirst; tongue coated; pulse small and powerless; vaginal discharge copious and fœtid; pain in back and loins, and great restlessness. On vaginal examination the uterus was found to

be enlarged and flabby: growing from the inner surface of the posterior lip, and intimately connected with it, there was an irregular roughened excrescence, soft, and yielding a most offensive discharge. To this astringents were at first applied, and afterwards the strong nitric acid, through a glass speculum: the application caused no pain. She took

Julep. Ammoniã c̃ Tinct. Cinch. C. ʒi. ter quotidie; with a Pint of Porter.

This plan of treatment she continued for six weeks; but her improvement was retarded by an obstinate attack of dysentery. She left the hospital improved in health, free from pain, with the discharge reduced in quantity, but still fetid.

E. W——, aged 35; married six years; no children. Had menstruated at periods of three weeks, the discharge lasting for seven days. Two years before she had suffered from considerable pain in the back and thighs: after going to bed, hæmorrhage suddenly came on: this lasted for a week, and continued to recur every ten days, and was always preceded by pain in the back. On examination, a large fungoid growth was found to spring from the inner side of the posterior lip of the os uteri: this bled on the slightest touch. The vaginal discharge offensive. The growth to be sponged twice a day with the following lotion:

Arg. Nit. gr. v. Aq. Rosæ ʒi. ft. lot.

Jul. Ammon. c̃ Tinct. Cinch. C. ʒi. Tinct. Conii ʒss. ter die.

This served to diminish the quantity of the discharge, and to lessen its factor.

M. A. H——, aged 36; pale and delicate looking; married at 18. Had had five children and one miscarriage. Catamenia appeared at the age of 15, attended with pains. Impaired vision from childhood, but was always rendered worse by suckling. Eighteen months back she had suffered from pain in the loins, languor, and a colourless, slimy, vaginal discharge. Three weeks after, hæmorrhage supervened, lasting eight hours: in four months there was a second attack of bleeding, which continued for five days: and re-appeared at sundry intervals up to the period of her admission. When received into the hospital the discharge was consi-

derable, and of a pinkish colour; her bowels regular; tongue clean, pale; pulse weak, 100; abdomen distended, tympanitic, with fluid in the peritoneal sac, measuring thirty-six inches around the umbilicus; urine of good quantity, clear, sp. gr. 1004, free from albumen. On examination, an irregular fungoid growth was found to spring from the whole of the interior surface of the os, descending some little distance into the vagina: its inferior surface was rough, like to a brocoli-head, and bled on the slightest touch. The treatment employed in this case consisted of diuretics and tonics. By their employment the quantity of ascitic fluid was diminished, and the patient's strength improved; but she refused to remain in the hospital more than a fortnight, and left without having employed the local measures that were deemed necessary.

*Uterus, Hypertrophy of.*—M. H——, aged 25; a pale, leucophlegmatic woman; married fourteen months, but never pregnant; always delicate. Menstruation commenced when she was 14 years of age; her periods were regular, and the quantity of discharge natural, until her marriage; after which time she was scarcely ever free from discharge, according to her report, of a menstrual character, accompanied with a considerable quantity of mucus. Her present illness dated about twelve months back, just after one of her periods, after she had been exposed to cold, and got her feet wet. She was suddenly seized with extreme pain in the pelvis, sickness, and faintness. The lower abdomen was tender on pressure: there was bearing down, accompanied with considerable pain in the back, and a thick discharge from the vagina. Continuing for some time under the care of a private practitioner without benefit, she was admitted into a public hospital, under the care of a surgeon, and treated at first by cupping, leeches, the internal use of mercury (which produced no effect on the system), hot hip-baths, and subsequently by cold shower-baths. Here she remained for two months, left, in some measure relieved, and attended as an out-patient for two months, but with no improvement. From this time until her admission into Guy's Hospital she had been a patient of a dispensary. On her admission she complained of great pain occupying the whole of the lower



abdomen, but especially its left side, and accompanied with considerable tenderness; there was also dulness on percussion; there was pain in the head; pulse 88, small and feeble; appetite moderate; slight inconvenience in micturition; bowels always torpid, but at all times she experienced great relief after they had been freely acted on by aperients. There was a thick vaginal discharge, streaked with blood.

*Nov.* 20th. Menstruation commenced on the previous evening. Bowels freely relieved by *haust. sennæ comp.*

22d. On a vaginal examination, there was an abundant, thick, gluey discharge; the uterus prolapsed; the cervix globular, tense, and tender; the os uteri small, but after slight manipulation admitted the uterine sound, which was passed to the extent of  $2\frac{3}{4}$  inches; its bulb could be felt above the pubes. The finger, passed along the anterior and posterior portions of the cervix, found the uterine tissue considerably increased in thickness; the uterus did not possess its usual mobility; and the upper and left side of the vagina was tense and tender.

*Hirud. iv. uteri cervici applic.*

*Hyd. c̄ Cretâ gr. vi. hac nocte, et Ol. Ricini ʒvi. cras mane sum.*

23d. Bowels not relieved until after an enema had been administered. The leeches bled well; and she expressed herself as feeling better.

25th. Leeches repeated, and with advantage; less external tenderness; discharge continued, and of the same character.

*Pil. Hyd. gr. ii. Pulv. Doveri gr. ii. omni nocte sum.*

*Pot. Iod. gr. iv. ex Dec. Sarzæ C. c̄ Ext. ter quotidie.*

29th. Leeches applied. There was considerable pain on pressure over the uterus; and she experienced more pain during the passage of the motions; bowels freely relieved.

*Dec.* 2d. Leeches again applied, and bled freely.—P.

5th. Bowels confined; leeches applied, and with benefit. Countenance improved; less abdominal tenderness; uterus diminished in size, less tense and tender.

*Rep. Ol. Ricini st.; et P.*

13th. Much better; free from pain; countenance had lost its pallid hue; discharge less. To continue the leeches twice a week, and to increase the *pil. hyd.* to gr. iii. night and

morning, and to rub the mild mercurial ointment on the groins.

18th. Discharge slightly discoloured in the evening: menstruation came on.

24th. The catamenia lasted five days. Leeches again applied, and bled freely; vagina red, and rather sore; no mercurial fœtor; discharge less.

31st. Leeches applied twice a week; gums inflamed; slight mercurial fœtor.

Rep. Pil. semel in die.—Omit Ung.

*Jan. 7th.* Mouth sore, and there was mercurial fœtor: womb smaller; cervix less swollen and tense.

Omit. Pil.—Repeat Leeches.

14th. Menstruation came on this day, and was attended with very little pain: soreness of gums disappeared.

Pil. Hyd. Chlorid. C. gr. v. omni nocte.—Continue the Leeches.

23d. Continued to improve in every respect.

Ung. Iodin. C. inguinibus nocte manequē infric.; et Pergat.

28th. For the last two days she had sat up for a longer time, and had taken more exercise in the ward, whereby the pains were increased to a slight degree.—Pergat.

*Feb. 7th.* Uterus smaller, less weighty, more moveable; cervix less swollen and tense: no pain.—Pergat.

11th. Continued to improve. Iodine to be applied by means of a camel's-hair brush to the os uteri. The preparation consisted of equal parts of the tincture of iodine and rectified spirit.

17th. Much better; cervix much smaller; uterus still to be felt above the pubes, but not so large as before.

Menstruation commenced on the 18th, was attended with but little pain, and the discharge was greater in quantity. On the 22d she was ordered

Omit. Ung. Iodin. C.—Aug. Tinct. Iodin. C. ad part. tres.

28th. Uterus continued to diminish both in bulk and tension: sat up the greater part of the day.

*March 7th.* Continued to improve, and at her request was presented, to attend as an out-patient three times a week, in order that the local application of iodine might be continued.

*Uterus, Induration of.*—A. B—, aged 52, with dark hair; florid complexion; married; had ten children, and had

miscarried six times, her youngest child being twelve years old. Catamenia regular. Twelve months before, she had violent hæmorrhage. Four years before she complained of weight in the uterus, with pain in the back: these continued, more or less, up to the period of admission. Within the last two months she had had slight whitish discharge: of late the pains had increased, attacking the lower abdomen, passing through to the spine, and extending down the thighs: micturition and defæcation were difficult. On examination the uterus was found enlarged, weighty, and seated low in the pelvis; the anterior lip and cervix were indurated and thick, but the surface was regular. Blood was ordered to be drawn by scarification, and she was directed to take

Pil. Conii  $\bar{c}$  Hyd. omni nocte.

Julep Ammoniac Acet.  $\bar{z}$ i. Sp. Æth. Nit.  $\bar{z}$ ss 6tis horis.

18th. Suffered great pain in the back, but the appearance of the catamenia gave her considerable relief.

22d. Less pain.—To continue the scarification, and to use the fofus conii  $\bar{c}$  liq. plumbi diacet. as an injection.

30th. Continued to improve; general health better; bowels rather constipated; less pain in the uterus; induration diminished.

Scarification repeated.

Liniment. Hyd. C. inguinibus infricand.

5th. Mouth and gums rather sore.—Omit Pil.

18th. Less congestion in uterus; induration diminished.—Perstet.

Oct. 3d. Pains have greatly lessened; the cervix and os uteri smaller and less hard; the body of the uterus not so tender or so much congested; discharge diminished in quantity.

7th. Presented.

M. A. W——, aged 26, a strumous-looking woman, of moderate height, light hair and eyes. Catamenia appeared at the age of eleven, and recurred at irregular periods, attended with pain. Married at twenty: in ten months was delivered of a living child by means of forceps. During her pregnancy she had a red discharge, lasting for three days and attended with considerable pain and sickness; symptoms



that were always present at her menstrual periods before marriage. After her labour she suffered from abdominal inflammation: this was treated antiphlogistically. She was laid up for eight weeks, but at length recovered, and was tolerably well for two years. She then began to get worse, and suffered pain in the back, with bearing-down pains, difficulty in micturition, and her bowels were with difficulty relieved. These symptoms persisted, notwithstanding medical treatment, for six months, until she was admitted into one of the London hospitals, under the care of an obstetric physician, where she continued for six weeks. On admission into Guy's Hospital she suffered from pains in the back and abdomen, occasional dysuria, constipation, with headache, sickness, &c.: her pulse was small, 106; tongue clean, &c. On examination the body of the uterus was found to be large and indurated, its neck long and hard, well studded with numerous enlarged follicles; both limbi were thickened and rough; and through the speculum were seen large livid-coloured granulations.

C. C. lumbis ad 3x.

Pil. Conii c Hyd. nocte manequ sum.

Fotus Conii. O i. Liq. Plumbi Diacet. ʒij. m. ft. lot. ter die tepid injicend.

4th. Better, but complained of severe pain in the abdomen; granulations still livid, and in the posterior part of the cervix some superficial ulceration was to be seen. Scarification was then employed every second or third day.—Pergat.

7th. The operation was followed by full bleeding; bowels irritable; menstruating.

Hyd. c Cretâ gr. ij. Pulv. Doverii gr. ij. ft. pulv. nocte manequ sum.; et Pergat.

11th. Menstrual discharge had appeared, but was attended with less pain than usual.

15th. Scarification again employed to-day; the os uteri was less congested, and the granulations had lost their livid colour.

19th. More sensitiveness of the os uteri; gums slightly affected; feels low spirited.

Rep. Pulv. omni nocte.

Sp. Ammon. Aromat. m xv. Tinct. Cinch. C. ʒi. Tinct. Lupuli ʒfs. ter quotidie ex Inf. Cuspariæ.

23d. Gums and mouth very tender; she looked better; had less pain, but was languid.

Omit. Pulv.—Perstet in usu Mist.

26th. Lips of the uterus diminished in size: lividity had disappeared. The iodine lotion to be applied by means of a camel's-hair brush.

June 4th. The application of the lotion had been followed by some pain of a burning character: slight symptoms of hysteria.

10th. The catamenia disappeared, having lasted four days, and attended with less pain.

11th. The catamenia returned, and in proper quantity, attended with considerable pain in the back and region of the uterus.

C. C. sacro ad  $\text{̄}$ viii.

12th. The cupping gave her great relief. The discharge had ceased.

16th. More congestion of the uterus. The os uteri and cervix were hot, swollen, and tender. Scarification to be repeated on alternate days.

27th. Thighs painful; sensation of weight and tenderness in the pelvis rather increased; slept but little of a night, and suffered from head-ache.

C. C. sacro ad  $\text{̄}$ viii.; et Perstet.

30th. Not so much relieved by cupping as before, although the sensation of pelvic weight had disappeared.

Pulv. Doveri gr. v. Hydrarg.  $\bar{c}$  Cretâ gr. iii. m. ft. pulv. omni nocte sumend.

July 3d. Had passed better nights after she had taken the powder: gums slightly affected by the mercury.

7th. Her husband having come from the country insisted upon taking her home.

A. R——, aged 42; pallid; married at 20, and had had six children and two miscarriages; her labours natural, but always followed by the loss of blood. Catamenia appeared at the age of 19, and had always been attended with pain. Her last child she had had three years before: she weaned it when it was nine months old. Whilst suckling, the menstrual discharge took place regularly. After her last confinement she had felt weak. Ten weeks back, after a severe

rigor, she was attacked with pain in the lower part of the back, extending to the left groin, hip, and middle of the thigh, and accompanied with pain in micturition and defæcation. The abdominal pain was of a forcing, bearing-down character. After this had lasted a fortnight, hæmorrhage took place, and continued for several days. The pain somewhat abated, but the hæmorrhage had three times returned in considerable quantity, and lasted several days: the pain in micturition continued. On her admission she complained mostly of the pain in her groin and lower abdomen, of a pinching and shooting character; nausea; the tongue was pale, slightly coated; there was no abdominal tenderness; slight sanguineous discharge; bowels confined. The uterus, on examination, was large and weighty; the anterior limbus and cervix were hot, tender, and much indurated.

Haust. Sennæ c̄ Magnes. Sulph. stat. sumend.

Hirudines iv. uteri cervici applic.

25th. Had less pain after the application of the leeches; some slight sanguineous discharge; bowels opened; cheerful.

Hyd. Protiodid. gr.  $\frac{1}{2}$ . in formâ pil. omni nocte.

Inf. Rosæ Co. 3vi. Aquæ Piment. 3ij. Magnes. Sulph. ʒij. fiat haust. ter die sumend.

30th. Red discharge increased in quantity; more pain; bowels rather constipated; pulse feeble.

Quin. Disulph. gr. ij. Acid. Sulph. dil. m x. Mag. Sulph. 3fs.

Inf. Rosæ C. ʒifs. m. ft. haust. ter quotidie sum.

3d. Discharge ceased; bowels open; less pain.

8th. Mouth slightly affected; complained of want of sleep. The discharge appeared, but in small quantity.

Adde Ext. Conii. gr. iii. ad Pil. nocte sum.

11th. Discharge again ceased; induration less, but complained of pain in the left groin.

To have the iodine lotion applied by a camel's-hair brush.

19th. The tincture was applied daily, with benefit. This morning she was detected committing an act of petty larceny, and, fearful of the consequences, she eloped from the hospital.

M. R.—, aged 38; a short stout woman; sallow complexion; married fourteen years. The catamenia appeared at the age of 13; were regular, but attended with pain. For



the preceding two years she had suffered from pain in the left groin and lower abdomen; and the inter-menstrual periods had been marked by the continuance of a copious, thick yellow vaginal discharge. The menstrual discharge also was greater in quantity, and attended with more pain, of a forcing character. For several weeks sexual intercourse could not be permitted on account of the pain. On examination the uterus was found to be seated low in the pelvis, large and weighty, its lip swollen and indurated: the anterior part of the cervix hard and thickened.

Pil. Conii  $\bar{c}$  Hyd. omni nocte.

Inf. Rosæ Co.  $\zeta$ vi. Aquæ Piment.  $\zeta$ ij. Magnes. Sulph.  $\mathfrak{z}$ ij.  
ft. haust. ter die sumend.

Hirudines viii. inguin. sinistro et uteri cervici applic.

8th. Discharge less; uterus diminished in size; tenderness and induration diminished.

Perstet.—Hirudines rep.

12th. Much relieved by the leeching, which continued to be performed every third day: mouth tender.

Rep. Pil. omni nocte; et P.

23d. Free from pain; uterus free from tenderness when pressure was made "per vaginam," more moveable; tongue moist; gums rather swollen.

Rep. Pil. alt. noct.

Sol. Iodin. per speculum vitreum applic.

3d. Much improved; free from pain; but little tenderness.

10th. Wishes to go out.

*Uterus, Procidencia of*—A. J. F——, aged 34, a fair, ruddy-complexioned woman, but with an anxious expression of countenance, was admitted into the hospital July 12th. She was married at the age of 22, and gave birth to her first child a year afterwards, and her last twelve months back; in all five children: labours natural. Nine years after her marriage she suffered from prolapse of the womb, and attended as an out-patient at Guy's Hospital for some time with benefit. Four months previously to her admission the uterus appeared externally, accompanied with severe lumbar pain, and interfering with the free evacuation of the contents of the bladder. At the time of her admission the womb had descended between the external parts, shewing its mouth and

neck, which were in a state of ulceration. The os was sufficiently open to admit the fore-finger without any dilatation: this could be passed to a measured distance of three inches and a half, before the membranes covering the fœtus could be reached (at this time she had entered the eighth month of her pregnancy). The treatment prescribed consisted in the application of warm fomentations and poultices to the ulcer, which was deep and irritable, the administration of tonics, and the occasional use of purgatives, which the indolent state of the bowels rendered necessary. This plan she followed until Friday, July 25th, when uterine pains supervened, and after a few hours she was delivered of a still-born female child, the presentation being the feet. From this she rapidly convalesced; and on rising from her bed a suitable bandage was employed, the ulceration healed, the uterus was restored to its situation in the pelvis, and she left the hospital a month after admission.

*Uterus, Prolapsus of*—M. S——, aged 44; a dark-complexioned woman; had been married, but had been a widow thirteen years: had one child a year before her husband's death, which was born alive after a tedious confinement. During her recovery she experienced bearing-down pains and a feeling of separation or division of the bowels, with the sensation of the existence of a foreign body within the external genitals. A few weeks after her confinement this tumor, said to be the uterus, was replaced, and remained without any annoyance to her for nine years, when it again descended after lifting a heavy dish, accompanied with copious discharge of a whitish-yellow colour, and from this time she had had feelings of distress. The uterus retired when she assumed the recumbent position, and before it prolapsed she had violent expulsive pains. On examination the uterus was found to be about one inch and a half from the external opening, free from tenderness, but superficially ulcerated. The recumbent position was maintained; and the regular action of the bowels secured by the following draught—

Mag. Sulph. ʒi. Infus. Gent. C. ʒiſs. ft. haust. ter quotidie sum.

Dec. papav. c̄ liq. plumbi diacet. was injected three times daily for a week, followed by the dec. papav. c̄ alum. Middle

diet, with a pint of porter, was allowed; and in a short time she left the hospital.

E. E——, aged 24, a pale delicate woman, married two years and a half, and residing in the Borough. Began to menstruate at the age of fourteen, but the catamenia were not regular in their appearance. Was the mother of three children born alive: the first labour lasted twelve hours, but terminated naturally. For some time after she got up she had an offensive discharge of a greenish colour, with constant bearing-down pains in her back. For the relief of these symptoms she attended as an out-patient under my care. Two months previously to her admission she was delivered of a second child, after a tedious labour, followed by hæmorrhage. About ten days after her confinement a similar offensive greenish-coloured discharge supervened. On her admission she complained of severe and constant pains in the back, dragging pains in the lower abdomen and umbilicus; dizziness of the head; costive state of bowels, with considerable pain in defæcation; difficulty in micturition; constant yellow offensive discharge; pulse small and weak; inability to sit up in bed by reason of the great pain occasioned; loss of appetite; tongue pale and moist: child weaned on account of her having no milk. On examination the uterus was found to be large and flabby; the os and cervix superficially ulcerated. There seemed to be considerable relaxation and descent of the whole of the pelvic contents. Ordered

Dec. Papav.  $\bar{c}$  Alum. pro lot. ter die injiciend.

Quin. Disulph. gr. ij. Tinct. Lupuli  $\zeta$ ss. Inf. Rosæ Comp.  $\zeta$ ifs  
m. ft. haust. ter quotidie sumend.

Vini Rubri  $\zeta$ iv.

6th. Bowels confined: the vaginal injection caused some pain.

Ol. Ricini  $\zeta$ ss. stat.

Adde sing. dos. Mist. Mag. Sulph.  $\zeta$ i.

13th. Much improved: all her symptoms alleviated; bowels regular; strength and appetite increased.

15th. Slight appearance of menstruation: injection to be discontinued.

20th. Menstruation lasted four days.

Perstet in usu lot. &c.



28th. Much improved; strength increased; discharge had greatly diminished.

30th. Able to walk without assistance, and had Hull's utero-abdominal supporter applied.

*Jan.* 5th. Catamenia appeared.

16th. A pessary, invented by Mr. Lund, was prepared for her: this she introduced herself in the morning, and throughout the greater part of the day, without inconvenience. On the 21st she left the hospital.

*Uterus, Retroversion of.*—M. G——, aged 25; married three years; hard worked; much engaged in standing. Catamenia appeared when she was ten years and a half old, and continued to return regularly until her marriage. In twelve months after marriage she was confined, but had a tedious labour. She did not leave her bed for five weeks; but as soon as she did she suffered from descent of the womb; it remained down until three weeks before admission. She, in consequence of the great pain and inconvenience, in a fit of anger forcibly returned it herself; but not without difficulty. This was followed by extreme pain in the lower abdomen, and right side, with dragging pain, sickness, &c. She had consulted no medical man. On her admission the abdomen was found free from swelling, but on its lower and right side there was extreme tenderness. The inguinal glands on either side, but especially the right, were enlarged and tender; the urine passed with difficulty; the bowels were costive, and their relief attended with indescribable agony. On vaginal examination the uterus was felt to be seated low in the pelvis, the dimensions of which were above the standard; the uterus was retroverted; its os was felt just above and behind the symphysis pubis, whilst the fundus was resting on the rectum. The edges of the os uteri were indurated, jagged, and fissured; the vaginal discharge was white, but scanty; her skin was warm and moist; tongue clean; pulse slow and weak. Her rectum and bladder having been emptied, I replaced the womb in its proper position. The left fore-finger was passed into the rectum, so as to elevate the fundus, and by means of two fingers of the right hand the cervix was drawn backwards. This double movement, which caused her some pain, sufficed to restore

the uterus to its natural situation. She was kept in bed, and ordered to lie as much as possible on her face.

Julep. Ammoniā c̄ Pulv. Rhei gr. iiifs. Pulv. Calumbæ gr. viifs.  
et Sodæ Sesq. exsicc. gr. iiifs. ter quotidie.

25th. Much easier ; much less pain in defæcation and micturition ; vagina and soft parts not so hot nor tender ; inguinal glands less painful ; vaginal discharge considerable in quantity.

28th. Allowed to get up and walk about the ward. She was ordered to wear one of Mr. Lund's pessaries, which afforded her great comfort.

A description of these pessaries, constructed by my ingenious and indefatigable young friend, I give in his own words.

"The elastic truss pessary for prolapsus uteri, which has been made for me by Messrs. Weiss and Son, consists of a spiral steel spring, slightly curved to adapt it to the form of the vagina, enclosed in a case of India-rubber to protect it from the discharges. The helix which it forms is not cylindrical in its entire length, but only for one-third, where it has a diameter of one inch ; the remaining two-thirds being considerably flattened, so as to give it an elliptical outline, the vertical and transverse diameters of which are respectively one-half and one-quarter of an inch. It measures along its convex border from three and a half to four inches. The wire of which it is made is about one-fifteenth of an inch in thickness, and the space between the turns about three-fifteenths. The cylindrical portion of the spring passes gradually into the elliptical, so that there is no perceptible shoulder or projection. The spring constitutes the framework of the instrument. It is covered with flannel to obliterate the interspaces between the wire, and then with sheet-caoutchouc, which, being fitted very accurately, prevents any moisture from entering into the interior. This elastic covering is passed over the larger end, where it forms a kind of cushion ; while the smaller end is closed with a piece of wood, turned into the shape of a button, which projects beyond it.

"The pessary is easily kept in position by means of a band, which is made to pass round the waist just over the crests of the ilia, and a broad thin pad, in which there is a

button-hole to receive the button just described. To the corners of this pad four tapes are attached, by which it is fastened to the band after the pessary has been introduced into the vagina. For this purpose, two of the tapes, after spreading right and left on the perinæum, are carried behind the nates through loops appended to the band, and brought round in front, where they are tied to any convenient length. The front tapes are next tied, one being placed behind, and the other in front of the band. In this manner the pad is made to press upon the external parts, which affords a comfortable sensation of support to the patient; and if the length of the pessary has been suitably chosen, the os uteri will be retained at its normal distance from the orifice of the vagina.

“The following are some of the advantages which I consider the elastic truss pessary will be found to possess over the more common forms at present in use. The source of support being situated external to the vagina and perinæum, these parts are not injuriously distended in counteracting the descent of the uterus. From the facility with which it can be removed and replaced, the patient is enabled to keep it free from those unpleasant discharges which are so abundant in these affections of the womb. While lastly, from its very moderate price, it is within the reach of the poorest person;—a matter of no slight importance, if it be recollected how frequently these displacements of the uterus occur in women who can ill afford to pay for more expensive instruments.”

*Uterus, Schirrus of*—E. R—, aged 44, of fair complexion, dark irides, and dark hair; married at the age of fifteen; had had three children and four miscarriages. Her first child was born when she was eighteen years of age. The catamenia appeared at sixteen, and recurred regularly, but copious in quantity. In 1830 she suffered from syphilis, of which she was not entirely cured for two years. Seven weeks previously to her admission she discovered a discharge of a serous character from the vagina, offensive in smell, and accompanied with pain in the back and loins. (For seven years she had been separated from her husband.) No particular pain in micturition or defæcation. On examination the anterior lip of the os uteri was found to be hard, nodular,



and everted; the posterior lip also nodular and enlarged, but not to the extent of the anterior lip. A small septum, of apparently healthy structure, intervened between the diseased parts and the reflection of the vagina. Her general health, which was at fault, was attended to; her appetite improved; her complexion became more healthy, and her spirits good. It was then deemed advisable to make the experiment of removing the diseased portion of the uterus. This was accomplished by Mr. Hilton, who, failing to draw down the uterus so as to protrude the os uteri through the external parts, removed the disease with this organ *in situ*. Considerable hæmorrhage attended and followed the operation, but was arrested by a large and firm vaginal plug. The operation was followed by peritonitis, which was treated by repeated leechings and the administration of calomel, antimony, and opium. When convalescing from this, she was attacked with dysentery of a most aggravated and fearful character, and for some days her life was in extreme peril; but she slowly recovered, and left the hospital to undertake the duties of a turnkey at one of the metropolitan prisons. The womb, however, was not freed from disease; for on making an examination some time after she had been performing her public duties, I found the discharge copious and offensive, with a return of the schirrus.

E. F—, a tall, exsanguine woman, aged 46, with dark hair and eyes; married; the mother of four children, two of whom were alive, the youngest being 22 years old. She had miscarried twice. She began to menstruate very early, and continued to do so regularly. Had been ill for four years; at the commencement of which period she had a very severe fall down stairs, and hurt her back and leg. Ten days after this accident she was suddenly seized with copious hæmorrhage, which lasted some hours, and was arrested by medicine. She suffered but little pain, except from the blow she received in the fall. This discharge was repeated at intervals varying from a month to six weeks: it continued for a week or two, and was then succeeded by a whitish discharge. During the whole of her illness she was under medical treatment, had taken medicine, and had used vinegar lotions. On her admission she presented the appearance of a person

who had lost large quantities of blood. There were pain and giddiness in the head, especially in the erect posture; shortness of breath on making exertion; a clear cotton-tearing sound over the aortic valves; pulse small and feeble, but regular; tongue pale and bloodless; legs swollen; no abdominal tenderness; excruciating pain in back, hips, and thighs; urine natural; vaginal discharge copious, brown, and fœtid. On vaginal examination the uterus was found to be large, and fixed in the pelvis by surrounding induration; the anterior lip and cervix thick and indurated; the posterior lip ulcerated and hard. The disease had extended to the upper portion and left side of the vagina. Ordered,

Lot. Sod. Chlorid. ter die injiciend.

Julep Ammon. c̄ Mag. ter quotidie.

Sol. Morphię Acet. ʒi. omni nocte sum.

24th. Discharge less: suffered but little pain in uterus or other parts.

31st. Improved in health: discharge less, but still offensive. The sound over the aortic valves had disappeared.

Jan. 12th. Improving steadily, but slowly, the quantity of the discharge varying from day to day.

On the 7th of February her general health had improved, and the discharge was free from blood. On the 17th she was presented.

E. B——, aged 49, a dark, sallow-looking woman; twice married; had had three children by her first husband, and one by the second; labours good; one miscarriage. Eight years before had retained placenta; and from this period had not been free from pain in the left inguinal region. The catamenia appeared when she was 16 years of age, and recurred regularly until about ten years before, when she suffered from copious hæmorrhage, accompanied with pain in the loins. Her general health had not been impaired for more than eight or nine months; but for eight weeks she had been confined to her room, and, for the greater part of the time, to her bed: For six months she had had a constant dark-coloured fœtid discharge, with constant gnawing pains in the left inguinal and lumbar regions, copious fœtid discharge from the uterus, and occasional hæmorrhage. She

had languor, debility, loss of appetite, headache, &c.: the tongue was clean; pulse feeble, and rather slow; no cough, dyspnœa, or palpitation of the heart; bowels generally costive, and micturition easy. No abdominal tumor or swelling, but slight tenderness on deep pressure in the left inguinal region.

On vaginal examination the cervix uteri was found to be destroyed by ulceration, so that the cavity of the womb was laid open, forming one continuous channel with the vagina. The discharge was copious, dark-coloured, and very offensive.

Morphiæ Acet. gr. i. in formâ pil. omni nocte sum.

Lot. Sod. Chlorid. ter quotidie injiciend.

Julep. Ammoniæ c̄ Tinct. Conii ʒfs. ter die sum.

Emp. Belladonnæ abdomini applic.

*March 2d.* Slept tolerably. Complained of great pain in the back and hips. The discharge much diminished in quantity, of a pale colour, and less offensive.

On the 9th she suffered considerable pain in the lower part of the abdomen, followed by a copious discharge from the uterus of a pale red fluid, from which she experienced great relief.

16th. Was in every respect better; and, desiring to leave the hospital, was presented.

*Uterus, Ulceration of.*—S. B——, aged 28; married at the age of 20; had had five children: one miscarriage, four months before. Catamenia appeared at 15, and were regular up to the period of her marriage. She attributed her illness to the miscarriage, never having afterwards been free from pain or discharge. She had dragging pains in the loins, a sensation of weight and pressure in the lower abdomen and back, with throbbing at the extremity of the spine. When she lay down these sensations were relieved, but not removed. Her catamenia were more copious, and attended with more pain after the abortion; the discharge between the intervals was yellow, thick, and occasionally streaked with blood, more especially after coitus, which was at all times painful. On examination the uterus was found partially prolapsed; the cervix swollen; the lips of the uterus large and everted. Through the speculum the anterior lip of the



uterus, as well as a considerable portion of the cervix, was found ulcerated, and presenting a red granular surface, bleeding on the slightest touch. The recumbent position was maintained, the nitrate of silver applied through the speculum every third day, the poppy and lead lotion injected, and the following draught exhibited :

Acid. Nit. dil. m x. Tinct. Lupuli ʒfs. Dec. Cinch. ʒxifs. m. ft. haust.

This plan she pursued for three weeks, and left the hospital with the ulceration completely healed.

E. R——, aged 62; married twice; and had had two children. Menstruation commenced when she was 14 years of age. Married her first husband at the age of 22. Menstruation ceased at the age of 45; before and after which she suffered from leucorrhœal discharge. About three months before admission she found the uterus had appeared externally, after lifting a heavy weight: the displacement was accompanied with considerable pain round the hips and loins, and whitish-yellow discharge, streaked with blood. On admission the uterus had descended through the external parts to the extent of two inches. On the anterior lip there was a large deep ulcer, the edges of which were callous. The ulcer was smeared over with a stick of the nitrate of silver; and she was ordered to apply a poultice made of bread-crumbs and the *lot. nig. c̄ opio*. As she complained of a troublesome cough, she was directed to take a compound conium pill thrice a day. This treatment was continued for twelve days, when the ulceration was entirely healed. The uterus, returned, was maintained in its place by an utero-abdominal supporter.

J. T——, aged 23; married five years and a half; never pregnant. Began to menstruate at the age of 15, and had always been regular up to the time of admission. Her illness commenced three months after her marriage, from a supposed abortion, from which she slowly recovered. In eighteen months she began to experience pain, during walking, defæcation, and micturition, in the pelvis and thighs, followed by a thick discharge of a yellowish colour. For the relief of these symptoms she at first placed herself under the care of a private practitioner, but subsequently was admitted

into a public hospital, where she remained five weeks, but left without improvement. On her admission into Guy's Hospital her health seemed tolerably good. She complained of much pain in the vagina and uterus, pain in the back and thighs, scalding in passing urine, and uneasiness during the evacuation of the bowels: there was a copious yellowish discharge from the vagina; and some tenderness when pressure was made over the uterus by the hand. Visual examination detected considerable ulceration of the os and cervix uteri. The vagina was narrow, and tender throughout, but more especially at its entrance. The nitrate of silver was ordered to be applied every other day, with the following medicine:

Infus. Cascarillæ c̄ Sodæ Sesquicarb. ter quotidie sum.

Dec. Papav. O i. c̄ Liq. Plumbi Diacet. ℥iij. pro lot. ter die inj.

This plan was continued in the hospital for three weeks, with success. After she left, she attended as an out-patient until the ulceration was healed.

M. C——, aged 50; unmarried. Six months previously to her admission she was suddenly seized with chills, followed by pain in the back and febrile symptoms. These were followed by a costive condition of the bowels, pain in the abdomen and back, coming on at intervals, and of a more lancinating character: these continued, notwithstanding the trial of remedies, until six weeks before admission, when she suddenly appeared to lose all power over her limbs, without numbness: this was attended by a severe pain in the hips, which came on whenever she exerted herself. For two years there was no catamenial flow; the last period continued for three weeks, and suddenly ceased: there was profuse leucorrhœal discharge. The uterus, on examination, was found prolapsed and congested: the vagina was bathed with a yellow, thin discharge. Through the speculum the anterior lip of the os uteri and cervix were found to be ulcerated.

C. C. lumbis ad ℥x.

M. M. c̄ Mag. Sulph. ℥iiss. bis quotidie sum.

*March 12th.* The cupping gave her great relief. Medicine to be taken once a day.

Dec. Papav. O i. c̄ Liq. Plumbi Diacet. ℥iij. pro lot. ter die injic.

18th. Much better. Less pain in the back and abdomen discharge less: ulceration healing.

Mist. Mag. c̄ Tinct. Hyoscy. ʒfs. ter quotidie sum.

21st. Much the same. Frequent attacks of globus.

Sp. Ammon. Arom. ʒfs. Inf. Cuspariæ ʒixfs. ft. haust. ter quotidie sum.

*April 2d.* Continued to improve.—The nitrate of silver to be applied to the ulcer every other day. Ordered,

Quin. Disulph. gr. ij. ter quotidie ex Inf. Rosæ C.

6th. Left the hospital.

C. F——, aged 17; a healthy-looking girl, of moderate stature, who had lived well. Catamenia appeared at 13 years of age. In September 1845 she left her home with some man; and after a few weeks' residence with him she suffered from pain during coitus, and in the act of micturition, accompanied with a copious vaginal discharge. This was treated by a surgeon as gonorrhœa. In the month of January 1846 she was placed under the care of Mr. Parrott of Mitcham; who found her suffering from pain in the back and above the pubes, occurring in paroxysms, and much increased during menstruation; a sensation of weight in the pelvis; and a profuse muco-purulent discharge. The symptoms were aggravated by exercise. On examination he found the cervix uteri red, increased in bulk, and low down in the vagina, presenting, on the anterior lip, an ulcer about the size of a sixpence. The vagina was red and inflamed. Menstruation was profuse, sometimes occurring twice during the month, at other times lasting from seven to ten days. From January to May she was treated by astringent vaginal injections, quinine and iron, and occasionally touching the ulcer with the nitrate of silver. She then removed to town, in lodgings, where for six weeks she maintained the recumbent posture. Leeches were applied to the groins and cervix uteri, and she took the iodide of iron; but as little improvement took place in the character of the ulcer, on the Tuesday previous to her admission it was touched with the acid nitrate of mercury: very trifling pain accompanied and followed the operation.

On her admission she complained of smarting pain during



micturition, but none on defæcation. The catamenia having appeared after an absence of three weeks, the condition of the os uteri was not ascertained until the 25th, when the os and cervix were found to be inflamed, and exceedingly painful when touched. On the anterior lip there was a small granulating ulcer, to which the nitrate of silver was freely applied. This occasioned her considerable pain, the suffering lasting for some hours. She was ordered

Inf. Rosæ Comp. ʒvi. Aquæ Pimenti ʒii. Magnes. Sulph. ʒij.  
fiat haustus ter die sumend.

Dec. Papav. O i. Liq. Plumbi Diacet. ʒiii. pro lot. ter die injic.

5th. Less pain in the back and abdomen. Discharge diminished. The nitrate again applied to the ulcer, which was much smaller.—Pergat.

11th. Ulceration nearly healed. The discharge more scanty, thick, and yellow.

Lot. Arg. Nit. (gr. iij. ad ʒi.) ter die injiciend.

22d. Presented.

*Vagina, Aphthous Inflammation of.* — L. C——, aged 33 ; a stout, tall woman ; married at 24 ; the mother of one child 8 years old : her labour had been lingering, terminated by natural efforts, but followed by hæmorrhage. After her confinement her menstrual periods lasted for a fortnight, and were attended with some bearing-down pains. Three years afterwards she suffered (as she said) from inflammation of the womb, which gradually yielded to the remedies employed ; and about six months before admission she was attacked with an itching, smarting pain in the vagina, with numbness in the right hip, extending down the leg. For these she attended as an out-patient, under my care, and obtained relief. A fortnight previously to her admission she found a white vaginal discharge : this soon became of a greenish-yellow colour, and attended with some smarting and irritation, especially when she took exercise. On her admission she complained of the pain occasioned by micturition ; and admitted that for some weeks she had not been able to admit the conjugal embrace on account of the sufferings it occasioned. There were sharp shooting pains in the lower abdomen and hips, both in the sitting and erect posture. She appeared to suffer severely by the digital examination,

although made with tenderness. The vagina was red, hot, and its mucous membrane throughout studded with small aphthæ and minute ulcers. A copious yellowish discharge oozed from the canal. Ordered,

Lotio Calcis c̄ Opio pro lot.

Mist. Mag. c̄ Mag. Sulph. bis quotidie.

10th. The catamenia appeared on the 6th, and lasted three days: they were accompanied with less pain. She said she was worse after she had used the lotion.

Lot. Arg. Nit. (gr. ij. ad ʒi.) ter die injiciend.

Liq. Hyd. Bichlorid. ʒi. ter quotidie ex Dec. Sarzæ. C.

17th. The pain much relieved; the lotion caused some smarting when injected; the vagina less red.—Pergat.

25th. The vagina had assumed its natural healthy appearance.—Pergat.

30th. Presented well.

*Vagina, Imperfect.*—J. P——, aged 26, a sallow, dark-complexioned woman, married six years, who had never had good health. At the age of twenty suffered from the retention of the menstrual secretion, which was found by a surgeon to depend upon an imperforate state of the hymen. This was punctured, and a considerable quantity of dark brownish-red fluid evacuated. All attempts to keep open the passage by bougies failed. In three months the same operation was performed, and with similar results. As operation seemed to fail, the surgeon advised marriage; but six weeks before this event took place she consulted Mr. Callaway, and was operated upon a third time. He repeated the operation seven months after marriage; but all attempts to dilate or keep open the passage failed, chiefly by reason of her refusing to suffer the pain caused by the introduction of the bougies. Five months before admission an opening was discovered, sufficient in size to admit the point of a probe, but no menstrual secretion had passed through it. At the periods when the catamenia ought to flow she suffered considerable pain, increasing, to a great extent, during the two previous years: at some periods there were intense pains in the loins, bearing down, headache, vertigo, sickness without vomiting, &c.

PLATE I.

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Section of fibrous polypus. Case of E. R. See p. 192.



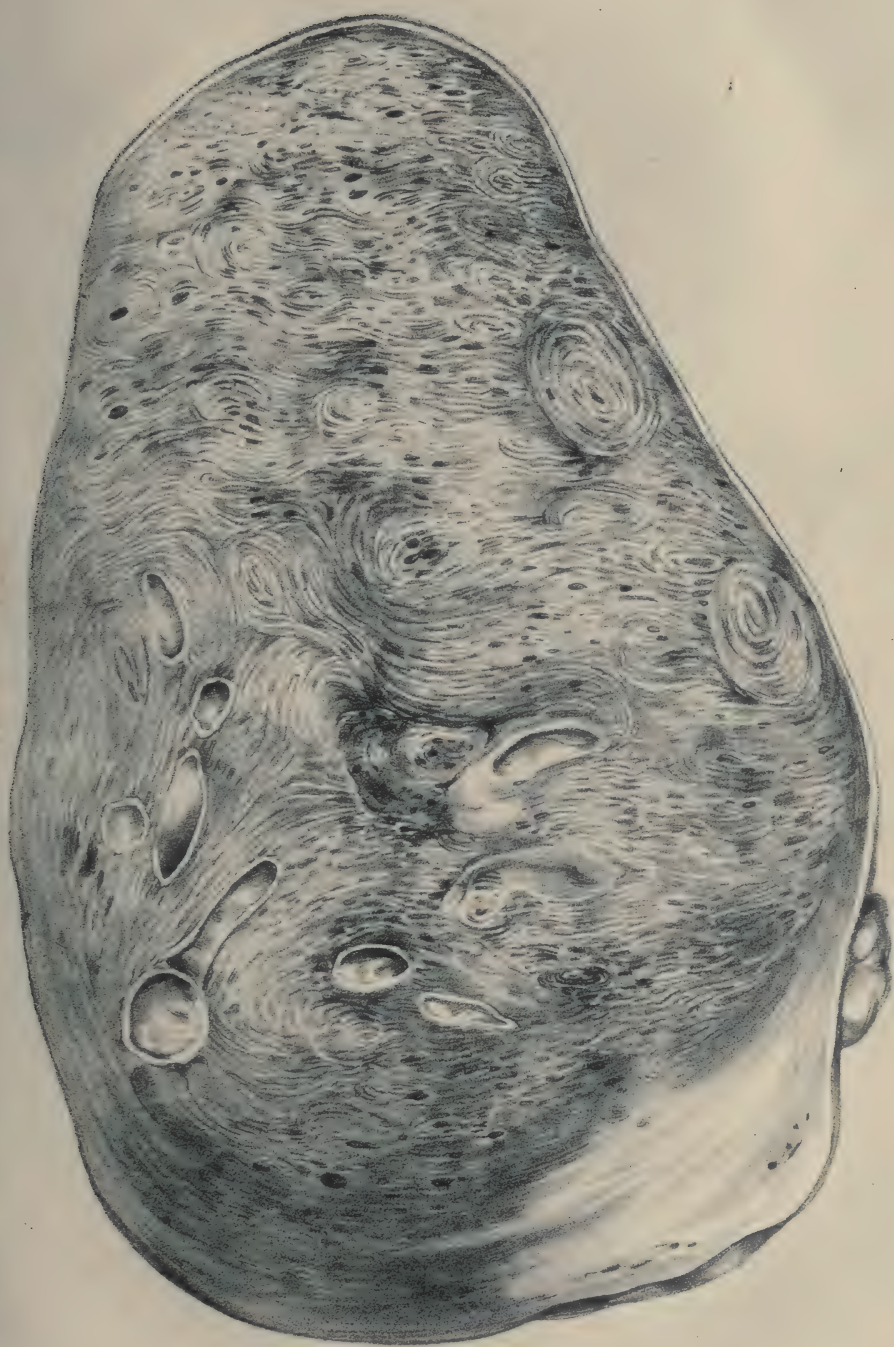








PLATE II.

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Shews the extent to which the polypus protruded on the fifth day after the operation. See p. 206.









PLATE III.

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*Fig. 1.*

Shews the two kinds of globules contained in the cyst, which was like the white of an egg, sometimes the larger, at others the smaller predominating. See Case of M. H., p. 187.

*Fig. 2.*

- a.* Shows the form of the cells of which the soft medullary tumors consisted: they had thick walls, which gave them a double outline, and they contained one, two, or three nucleated cells.
- b.* Represents the structure of the hard or fibrous parts of the malignant growth: the cells were not so large or coarse, were more indistinct, and imbedded in a firm fibrous connecting tissue: in the same tissue were a number of small fat cells.
- c.* Elongated fusiform cells, contained in the hard fibrous growth. See Case of E. R., p. 193.

*Fig. 3.*

- a.* Nucleated fibres composing the chief part of the tumor.
- b.* Simple cells found in the yellowish part: the structure was fibrous as at *a*, but the nuclei were not so defined.
- c.* Simple cells aggregated and contained in a capsule, or free from the soft and vascular part of the tumor. See Case of J. R., p. 239.







ON THE

## PHYSIOLOGY OF CELLS,

WITH THE VIEW TO ELUCIDATE THE LAWS REGULATING THE STRUCTURE  
AND FUNCTION OF GLANDS.

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OF THE STRUCTURE AND FUNCTIONS OF THE LIVER.

No department of physiology is so replete with proofs of improvement and progress, accomplished within the limited period of a few years, as that which embraces the history of glandular structures. From the time of Malpighi to the announcement of the important researches of Professor Müller, "*De Glandularum secernentum structura penitiori*," anatomists had indeed acquiesced in the reception of doctrines much further removed from the truth than the views originally propounded in the dark ages of science by the illustrious Malpighi.

Although constituting no greater gift to physiology than the satisfactory correction of the undefined ideas and erroneous hypotheses implicitly received by nearly all preceding and contemporary physiologists, the investigations of Müller yet opened to clear view the principles which governed universally the disposition of the vascular and tubular elements of glands. From this period all subsequent observers in this department of ultimate anatomy have dated the commencement and progress of their singularly successful researches. The great problem involving the true relation subsisting between the blood-vessels and the mucous tubuli of glands formed an obstacle to the advance of improvement, which, for its complete removal, required the successive investigations of many distinguished men. An elegant and philosophical essay by Mr. Grainger,\* written before the introduction into physiological science of the cell-theory of

\* Art. Gland, Cyclop. Anat. and Phys.

secretion, presents, in a very enlightened manner, an epitomized view of the state of knowledge, and the dogmas currently taught, prior to the time when the discoveries of the modern achromatic microscope dispelled, with a flood of brilliant though not unanticipated light, the contradictory assumptions and imperfect demonstrations of a former age. From the eminence, to which recent accessions to science have elevated the physiologist of this day, he looks back with deeply-felt surprise at the rude conceptions of Ruysch, which recognised the existence of a direct inosculation between the small blood-vessels and ultimate ducts of glands, as the actual law of their structure. Such opinions tend rather to degrade than to refine the ideas of the cultivator of organic science, accustomed to contemplate the subtle elements of organization, even in the least complex examples, under reciprocal dispositions the most wondrously perfect. It is impossible to conceive two things more widely dissimilar than the coarse and mechanical hypotheses of Ruysch and the exquisite demonstrations of more recent science. The first surmise towards the true interpretation of the agency of cells in the process of secretion occurs in the writings of Purkinje. By this distinguished observer, the great, though simple idea was first systematically expressed, that glandular action consists essentially in the agency of the epithelial cells, lining the mucous surface of the terminal ducts. Every discovery subsequently made—and here claimants to the honour of having contributed original observations, of less or greater value, to the sum of recorded knowledge crowd upon the historian in endless number, from the ranks of Continental and British physiologists; and every principle in organic science, most recently developed by those devoted to microscopic investigations, concurrently tend to the confirmation of these views. The researches of Mr. Bowman and Mr. Goodsir stand, however, pre-eminently distinguished from all others, for accuracy of description and truth-like probability. The time has fully arrived, when authors on systematic physiology may securely condemn, as futile and unimportant, the controversial speculations of Bichat\* and Meckel†, in relation

\* *Anatomie Gen.* tom. ii.† *Man. d'Anat.* tom. i.



to the part enacted by the ducts of glands in the establishment of their secreting character. The recent publications of Mr. Simon\* and Dr. Oesterlen†, containing an able and elegant announcement of their observations on the structure of glands destitute of excretory ducts—considered in connection with the previously established cell-machinery, and its active operation on glands marked by the possession of excretory ducts—should undoubtedly be accepted as well defined grounds for banishing all consideration of these parts from the generalizations hereafter to be adopted.

The basement or liminary membrane—interposed between the active cell and the channel of supply, the blood-vessel—evidently derives no part of its physiological value from the circumstance of its continuity with the parietes of the excretory duct. The functional operation of this membrane is determined unquestionably by the contact and influence of the operative cells disposed on its free surface. It may therefore be enunciated, with great confidence, as a principle of universal application in glandular formations, that all dynamic movement in the secretive transformation, effected by these organs, originates in the nucleated cells; and that, whether the intervening hyaline membrane be continuous with the wall of the duct or constitute the involucrem of the cell itself, the preparatory property, impressed by its agency on the nutritive fluids tending from the blood-vessel towards the interior of the nucleated cell, must be essentially identical. The involucrem of an epithelial cell, or the cell-wall, like the basement membrane, which immediately sustains the epithelium of the mucous ducts, is a proteinized hyaline structure. A chemical and physiological similarity between these two structures is susceptible of evident proof. From a consideration of the blood-vessel, liminary membrane, and nucleated cells, viewed collectively in this physiological relation, a generalization, with respect to the true method of glandular action, of a greatly simplified character, may be eventually developed. Such inductions strikingly tend to expand the circum-

\* *Phys. Essay on Thymus Gland.* London, 1845. *Compar. Anat. of the Thyroid Gland*, in *Phil. Trans.* for 1844, part 2.

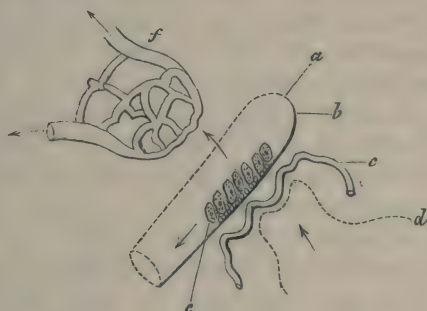
† *Beitrag zur Physiologie.* Jena, 1843.

scribed conceptions of those, who attach importance to the numerous distinctions of figure and form, belonging to the terminations of the mucous system in the various glands of the body. A cell may act in accordance with one and the same principle, whether the secretory product elaborated by its microscopic machinery be immediately discharged upon the free surface of an out-tending channel, or return into the blood, to execute, in its prepared form, still further functions. The purposes, if any, to which the secretion may be applied, should be viewed, as facts happening posteriorly in the order of occurrence to the office fulfilled by the cell-laboratory in the preparation of the secretion. Considered thus as distinct and separate events, the physiologist finds himself unembarrassed by contributory and accessory phenomena, and regards the subject, which respects the structure and agency of gland-cells, in its independent and unobscured relation.

The divisions of glands, introduced by Mr. Goodsir, into those, of which the secretory canals terminate in follicles, and those, of which the tubular system ends in vesicles, may be received as a convenient classification for the purposes merely of descriptive anatomy. It is, however, an undoubted fact, that a follicle and a vesicle differ, in no essential respect, in their physiological character. A vesicle is convertible into a follicle by a simple extension of surface, and, conversely, a follicle into a vesicle by a contraction. The classifications of the older anatomists, founded implicitly upon the external appearance of the entire gland, led to the introduction of the terms, 'simple' and 'compound,' 'conglobate' and 'conglomerate,' &c.; an arrangement suited only to the work of elementary description. It may be urged, as an argument of great power against the supposed accuracy of these distinctions, that during the gradations of development the same gland passes through the follicular and vesicular types, without sustaining corresponding transitions of office. The secretion must be the same in composition at first as at last, since it has to supply the same wants. But whilst it must be admitted that all recent discoveries in physiology, and the whole progress of the science, have tended in a very remarkable manner to the simplification of all organic laws, and divested the principles of organization of much of their

obscurity; the state of knowledge, advanced though it be, would condemn it as premature at present to assert that the mechanical disposition, with respect to each other, of the capillary plexus, the secretory canals, and the epithelial layer, has nothing to do with the individuality of organs. In external configuration the liver is very unlike the kidney. The description applicable to the capillary system of secretory canals of the one would serve to convey but an imperfect conception of the anatomical disposition of those of the other; yet a single capillary vessel, the hyaline membrane and secreting cell, if thus simply viewed, would be found, in both, to bear to each other the same precise relation of contiguity. In both, the blood-vessel is disposed on the parenchymal side, and the active secerning cell on the free external surface of the hyaline or basement membrane; which, with reference to these two elements in the example of all glands, holds the same intermediate position. The subjoined plan will serve well the purpose of illustration.

Fig. 1.



- a. Excretory canal.
- b. Basement membrane interposed between the capillary blood-vessel *c* (accompanied by the nervule *d*) and the glandular epithelium *e*. The arrows shew that the product of the cell agency may either flow outwards along the channels of the excretory ducts, or in the direction, by absorption, of the lymphatic plexus *f*. From this diagram it may be seen that the extremity of the tube *a* may be either a sphere or a plane, without in the least degree altering the principle of the gland.

It may be seen, that whether the three glandular elements, of which the above plan is designed to illustrate the order



and relation, be placed at the extremity of the duct or at the sides, no difference of principle results: the produce of their mutual agency would still virtually appear under the same circumstances. These considerations, in regard to the true physiology of glands, suggest reasons for hesitation in accepting the theory recently proposed by Mr. Goodsir,—that the terminal extreme of the gland-tube constitutes the centre or germinal spot of the action. It will be subsequently proved that this hypothesis is opposed to the principal facts adduced in this Paper. There are undoubtedly instances in which very pointed and significant evidence may be advanced for the corroboration of Mr. Goodsir's views. At the same time, as will be hereafter abundantly established, his views must be received with great reservation; nor can they, at present, be conceded as approaching, in generality of application, to a physiological law.

A few years ago, when embryology, in the indefatigable hands of the German anatomists, was being raised to the standard of a perfect science, the developmental analogies of individual organs, or transcendental physiology, as it was proudly called, absorbed a great share of general attention. In the organs of a higher animal, during the successive stages of evolution from the embryonic rudiments to the completed conditions of adult maturity, it has been long affirmed that transient phases of structure occur, of which the precise counterpart may be found, in a persistent form, in animals occupying inferior positions in the organic scale. When the history of cells in the several glands of the body shall have been more accurately and circumstantially determined, we may anticipate that much of this alleged homology will have to be expunged from the tenets of physiologists, as founded upon imperfect comparisons and speculative exaggerations. The extravagance of such views is strikingly proved by the facts, brought to light by a comparison of the biliary organ in the animal scale with the same organ in the embryo. As respects only the tubularity of the ducts, there may be some approach to homologous affinity; but in relation to the features of those ultimate elements, which constitute the real characteristics of the gland—the nucleated cells, those of the rudimentary, even

in the embryo, and those of the biliary organ in any invertebrate animal, or even many of the lower orders of the vertebrate kingdom, a most striking dissimilarity is at once perceptible. The matured cell of the gland of the inferior animal, and the incompletely grown cell in the gland of the embryo, are distinguished by very marked differential characters. The observations afterwards to be advanced will place this position in a very probable light.

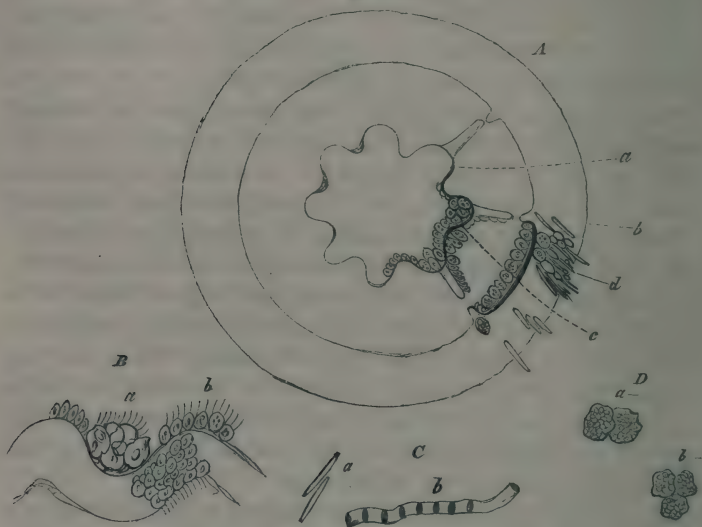
The researches of comparative anatomists have contributed most important additions to the knowledge obtained by the study merely of human anatomy. Whatever of condemnation may be pronounced on the transcendental visions of modern physiologists, the lessons of comparative anatomy form, undeniably, invaluable introductions to the more difficult heights of investigation, which the original observer is required to scale, in all successful determinations of structure in the complex organs of the higher animals. It is on this account that it is proposed, in the following observations, to pursue an inductive course of ascensive inquiry, with the view to the determination of the true laws regulating the organization and function of the liver.

These functions, which, in the superior members of the animal scale, require, for their efficient performance, separate organs, in the simpler organisms are executed apparently by a common structure. Nothing is so difficult at first to understand as that contradictory combination of office, which seems to have been realized in the instance of the digestive cavity of the *actinia*. The ciliary currents, of which the interior lining membrane is the unceasing scene, and the gland-like nucleated cells, composing the structure of its walls, seem certainly to constitute the real provisions in this animal for the fulfilment of the important purposes, at one and the same time, of respiration, secretion, and assimilation.\* The

\* The best account of the anatomy of the *actinia*, that I am acquainted with, is given by Professor Sharpey, in his excellent article on Cilia in the Cyclop. Anat. Physiol. Professor Sharpey, Rhymer Jones, Rapp, the great observer of the habits of the *actiniæ*, Mr. Graham Dalyell, and other contributors to the history of these curious animals, have all left the subject doubtful and unsettled as to the manner in which the ova escape from the ovigerous chambers. I can state most positively, from numerous observations which I have recently instituted upon the structure and habits of the *actinia equina*,

annexed illustration, worked carefully from numerous dissections, is offered as an expression of the ultimate parts, of which the simple, yet perfect body of the actinia is composed.

Fig. 2.



- A. shews, in transverse section of the whole body of the actinia equina, the arrangement of the structural elements *in situ*. *a* exhibits a view of the digestive cavity, with the duplications and intermediate sulci, giving lodgement to large glandular cells, which are shewn, still further magnified at D, *a*, and *b*. *a* (magn. 300 diam.) contains scarlet-red granules, and *b* bright yellow, yet both taken from the same sulcus on the wall of the stomach.
- B. displays the true structure and disposition of the epithelium of the stomach.
- a*. The large glandular and assimilative cells in the depressions between the valvulae conniventes, if such the rugae can be called.
- b*. shews the epithelium, coating the convexity of the membranous folds of the stomach. The wall of the stomach contains also, interspersed between the cells of the interior, striated muscular filaments, such as that shewn at C, *b*; and in addition a few cau-

found in great abundance over the coasts about Swansea, that the actinia is ovoviviporous; that the young attain a considerable size in the compartments between the stomach and the outer tegumentary wall, containing the ovigerous organs, where they live in a free state for some time after their escape from the oviduct, and that they are always ejected by the mouth of the parent.



date, non-nucleated, non-granular, needle-like cells, which are very numerous in the outermost layers of the integuments, and about the tentaculæ. Nothing else bearing the character of fibrous or elastic tissue occurs in any part of the body of the actinia. The extraordinary circumstance about their history is, that there is no difference of size or figure amongst them. Are they cells, or rudimentary fibrous filaments? No follicles exist in the stomach.

From the description of all preceding observers of the structure and peculiarities of these humble organisms, it was confidently expected that the biliary system in the actinia would be discovered under circumstances of the greatest practicable simplicity,—under the form, namely, of ‘a follicle’ in the walls of the digestive sac. Practical inquiries will indisputably prove that such statements are founded only on theoretical suppositions. Each succeeding author on comparative physiology, has at once admitted and transmitted the errors of his predecessor; so that it has actually become an axiom, that, however inextricably complex an organ may be in the highest orders of animals, its remote submultiple, its rudest dawning in the distant extremity of the declining scale, will be found, without a solitary exception to diversify the monotonous law, to consist of a follicle. This is the invariable terminus of all researches after the “analagous” and morphological reductions of organs, which acquire complexity of internal arrangement. In regard to the provisions made for the supply of secretions in animals, of which the body altogether is no more involved than a large follicle, it seems superfluous to urge the argument, that, if a follicle, with its component machinery of cells, membranes, and vessels, were furnished for the exclusive purpose of elaborating a single secretion, a subordinate organ, subservient to uses of a minor importance, would exceed, in complexity of structure, the organism viewed as a whole. In the minute structure of the actinian polype direct proofs may be obtained to confirm the view, that a follicle is not the ultimate link in the chain of morphological reductions. Aggregations of nucleated cells occur in the depressions between the vertical duplications of the digestive membrane, which, in their intimate organization, seem, in a very obvious manner, to unite all the requisite of a gland.\* These cells are

\* Since committing myself to the views stated in the text, I find that Dr.

held together by, and are lodged in, a semi-fluid plasma of extremely tenacious property;—a property which acquires importance in the use apparently assigned as one of its functions of holding the cells *in situ*, and of preventing displacement and injury during the dilatations and contractions which the stomach is destined to undergo. The epithelia attached to the convex parts of the membranous folds are more transparent, less charged with granules, and inferior in size to those occupying the sulci. The difference is extremely trifling between those cells in the sulci, which seem clearly to claim the character of glands, and those found in the stomach-wall. But what seems irreconcilable with the opinion which allots to the cells a glandular office, is the existence over the whole surface of the stomach of an active ciliary motion. Mr. Bowman has arrived at results, with respect to the distribution of cilia, which he emphatically expresses thus—"That no cilia are discoverable on glandular cells;" which latter, he states, are generally spherical in figure in distinction from the prismatic and other varieties. If this generalized statement be founded on truth, the cells on the surface of the stomach and in the structure of its walls, in the sea-anemone, cannot discharge a glandular function. To this view, however, the great anatomical fact in the history of cells must be advanced in opposition—that cells, of which the interior is replete with molecules, must be in themselves the seat of some very active secretive or

Grant, in his excellent work, "Outlines of Comparative Anatomy," p. 578, has expressed in principle the same opinion; that is, he contends that a secretion may be furnished by a group of anatomical circumstances more simple than a follicle, although he says nothing whatever of the mode in which such a result can be brought about. He makes no allusion whatever to aggregations of nucleated cells. In allusion to the stomach of the actinia, he remarks that those parts of the stomach furnishing the digestive secretion "appear striated with thick opaque patches, like the blastema of a future follicle." "We may regard, however, most of the glandular or secreting organs of these lowest classes as still in their simplest condition of *flat, smooth, secreting membranes*, which have not yet developed even cryptæ or follicles to extend their surface and to provide for the different kinds of products; and yet their *secreting powers are very considerable*, and their products most varied." It is evident that a *smooth membrane* would not constitute, in the view of modern physiology, the anatomical condition required to separate from the blood a glandular product: at the same time the statement of Dr. Grant is very near the truth.

nutritive process. In the structures of vertebrate animals, the common rule is, that cells armed with cilia are nearly, if not altogether, destitute of granular contents; the internal operations or capabilities being either sacrificed or suspended to gain the external purpose of motion. Their position with respect to the digestive cavity, their anatomical peculiarities, considered in conjunction with the negative circumstances of the absence of proper organs for such secretions, the cells on the walls of the stomach in the actinia, must subserve the manifold office of absorbing nourishment from the digestive cavity, of elaborating proper secretions for its reduction, and of effecting its subsequent assimilation. Of course it is not intended, in this general explanation, to assert, that the same individual cell, at the same moment of time, performs functions so various. No more is desired to be understood than the inculcation of the principle, that a few simple epithelial cells, placed in near neighbourhood to each other, under apparently the same anatomical conditions, may severally discharge physiological offices widely dissimilar. One may secrete a biliary product, whilst another may elaborate the digestive fluid. The probability of this view is countenanced in a very decided manner by the fact, which presents itself frequently and unequivocally during the examination of the cells on the stomach of these polypi, that groupes of cells, taken almost from the same immediate spot, appear so essentially and structurally distinct, as, in one case, to contain granules and nuclei of a brilliant scarlet colour; in another, those of bile-like yellowness; whilst a third may offer merely a colourless and transparent albumen.\* These are unques-

\* Through the kindness of Mr. Moggridge, a gentleman who has extensively studied the confervæ in the neighbourhood of Swansea, I have lately had the gratifying opportunity of studying several specimens of the protococcus. The observation made in the text, that cells of *identical* conformation may be charged with molecular contents varying greatly in external characters, receives very conclusive proofs in the examples of the several varieties of the protococcus.

Fig. 3.



a. Hamatococcus, or red variety of the protococcus.



tionable physical facts in the history of organic elements; and confessedly speak a language which it is not yet in the power of physiologists confidently to interpret. They establish the necessity of widening the signification ordinarily attached to the term 'gland;' of receiving it, in future, in an acceptation of greater generality. It is desirable here to observe, that the yellow colour, by which the contents of the cells are frequently distinguished, is not necessarily demonstrative of their biliary character. There are other points of considerable physiological interest unfolded by a study of the ultimate organization of these inferior members of the animal services, which may be here incidentally noticed. In the plan displayed at Fig. 2, the outer tegumentary wall of the actinia is shewn to be composed of three component elements—the orbicular-nutritive cell; the spindle-shaped, or acicular cells; and the muscular fibres; all being agglutinated compactly together by an interposed molecular plasma of very adhesive qualities. The acicular cells are worthy of separate examination. They are certainly the rudimentary prototypes, either of fibrous filaments, or the simplest form under which a skeleton may exist. They are

*b.* Hepatococcus, or yellow variety.

*c.* Protococcus viridis, or green variety.

*c'.* Shews the quadripartite principle of multiplication in these cells.

The colour in all is strictly confined to the granular contents.

Magn. 250 diam.

In the hæmatococcus of Agardh, for example, the granules are blood-red; in another variety, the protococcus viridis, the contained molecules are brilliantly green; while in a third, which, like the two former, consists of an orbicular cell, and presenting no distinctive marks of difference in structure, the interior is filled with a *bright yellow* secretion: to this latter variety the name of hepatococcus, or cholecoccus, may not inaply be applied. This extraordinary power of elaborating products, differing so strikingly in appearance and probably in essential composition, by a hyaline involucrum, which seems none other than a simple structureless membrane in all, conveys the lesson of humility to the microscopic observer, that his instrument, with all its wonderful power of analyzing, simplifying, and penetrating into the last subtleties of physical organization, is notwithstanding insufficient to carry him to the extreme of assigning the *ultima ratio* of dynamical endowments: vital properties, radically dissimilar, are conferred on organized matter of identical physical characters.

undoubtedly, in some way or other, subservient to motive mechanical uses; for they preponderate in number about the bases of the tentaculæ, and in the tegumentary structures. They are comparatively infrequent over the digestive walls, although these obviously possess a great power of contraction and dilatation. These acicular cells are uniform in size and microscopic appearances. They measure about the  $\frac{1}{500}$  of an inch in length: they are not, like the orbicular cells, armed with cilia. Can they constitute the fibrous constituents of this simple structure, and act in concert with the muscular system? They may be regarded, with greater probability, as expletive elements introduced to impart solidity to the tegumentary parts; and as forming, in reality, the first vestige of a tegumentary skeleton. The difference between the ultimate organization of the digestive sac and that of the outer tegumentary parietes of this animal, may be accurately said to consist in the latter part being more highly endowed with these motive elements. The glandular, ciliated, and orbicular cells, are common to every part of the body, although they exist in greatest number and development on the walls of the digestive sac; while the acicular, as formerly stated, are preponderant in the structure of the outer wall of the body. These observations suggest most emphatically the necessity of an extension of the bounds generally conceived to circumscribe the principle of the functional convertibility of organs. It can no longer be questioned that great dynamic modifications may arise in cell-structures, without a coincident change of organic conformation. These acicular cells bear a most remarkable analogy to the spicula, investigated with so much ability and labour by Mr. Bowerbank, composing the rudimentary skeleton of the siliceous and calcareous porifera. The nucleated cells of the common hydræ, especially that of the hydra fasca, are analogous to the glandular cells of the actinia; smaller in size, and less definite in organization.

In the pulmonigrade acalephæ, supposed glandular organs have been described by Dr. Eschscholz.\* They are situated in minute depressions around the circumference of

\* *System der Acalephen*, Berlin 1829. *Annales des Sciences Nat.*, Vol. XXVIII. p. 251.

the disc, and connected by means of small ducts with the nutritive canals, and conjectured to belong to the biliary system. The nutritive system or organs, in this interesting class of animals, requires, however, and will repay in fruitful results, a closer and more minute investigation. In cestum, among the ciliograde medusæ, diverticula are described by Professor Grant as appended to the tranverse and short alimentary canal of this beautiful animal; and are supposed, by that accomplished naturalist, to be the provisions for the production of the hepatic fluids. In rhyzostoma favourable opportunities are afforded for the examination of the organs devoted to the great purposes of secretion and nutrition. The unrivalled preparations of this fragile yet massive animal, contained in the collection of the Hunterian Museum, leave scarcely any thing to be contributed to the existing knowledge of its descriptive anatomy. The ramifications of the digestive system, into the vertical arms, and throughout the dome, in a series of exquisite reticulations, unite, in this paradoxical animal, characters the most illegally anomalous. To John Hunter is due the merit of first describing the excentric distribution of the alimentary system in rhyzostoma: to Cuvier\* belongs the praise of first physiologically explaining the phenomena. According to the account of Professor Owen†, the food, which principally consists of infusorial animalcules, enters the digestive system at the remote ends of the vertical arms, gradually ascends along their central tubes, and gains the large bag situated under the centre of the dome. Here the description of Mr. Owen ceases to be minute; he seems disposed to adopt the erroneous ideas of Eschscholz with respect to some supposed minute depressions at the margin of the disc, for the elaboration of bile. No structure, bearing the remotest semblance of a biliary provision, can be discovered in rhyzostoma, except it be found to exist in the corrugations of the sacculi of the stomach, which anatomists have hitherto but most imperfectly and inaccurately described. It may be desirable, preliminarily to the discus-

\* Journal de Physique, Tom. XLIX. p. 436. 1799.

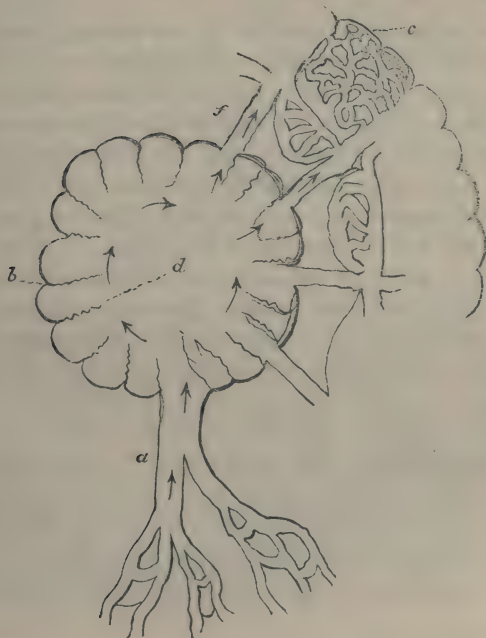
† Lectures — Comparative Anatomy of Invertebrate Animals, p. 102. London, 1843.



sion of this subject, to observe, that the large sacculated bag, which occupies the central space at the inferior surface of the disc, the proper digestive cavity or stomach, must unquestionably be the seat of all the chemical and resolving processes, which in this animal the food is required to undergo. It is unnecessary to remark, that in this example, as in others of the medusæ, there is no separate and independent system of blood-vessels for containing and circulating the nutritious fluid. Mr. Owen restricts the appellation of 'blood' to the fluid circulating in the channels of the dome; but it is obvious that that ascending through the axial canals of the vertical extremities must also possess some nourishing property; else the vitality of the arms, which contain no other system of canals than that which serves for the conveyance of the alimentary fluids upwards towards the central stomach, could not be sustained. The following outline will enable the reader to judge correctly of the relations of this system of digestive canals.

*Fig. 4.*

PLAN OF THE NUTRITIVE SYSTEM OF RHYZOSTOMA.



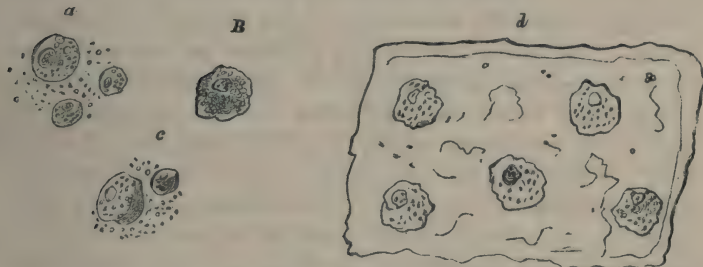
- a. Radicles, beginning at the extremities of the vertical arms in open orifices, leading into canals running up the axis of each depending arm, and communicating with the stomach (*d*), a sacculated bag, opaque in colour, tough and gristly in its parietal structures; the sacculations inside being more or less filled with opaque yellowish, granular, gland-like nucleated cells. From the stomach (*d*), where the food has become reduced to chyle, or, in other words, has undergone conversion into a more highly-organized substance, it passes into the canals (*f*), and thence circulates through the reticulated channels at the margins of the disc. What now becomes of the current is difficult to say. It is probably lost in this system. In the propulsion upwards of the nutrient fluids, the mechanical movements of elevation and depression in the dome are the principal agency. When the margin of the disc is depressed, the central cupola is forcibly raised, by which action a tendency to a vacuum is strongly created in the digestive cavity underneath: a rush of water would then instantly take place into the inferior orifices from external atmospheric pressure; but the admission of the surrounding element is guarded and regulated by the sensitive contractions of the orifices in the arms. When the central dome is pressed down, and the margin elevated, a forcible impulse, by compression, is given to the contents of the stomach in the direction of the canals leading towards the reticulated system of the disc. I am not aware that this explanation of the mechanism of the circulation in rhyzostoma has ever before been offered.

The stomach is surrounded by the strong elastic columns which tie the inferior arms of the animals to the horizontal canopy: large oval spaces are left between these columns, where the sacculations of the stomach protrude outwards, quite uncovered, in contact with the surrounding element. Whether viewed chemically, as respects the endosmosis of water which may occur at these situations, or mechanically, as connected with the power of the organ at these parts to contract and dilate, these exposed portions of the stomach probably perform some active function. Examined from without, the stomach is seen to be distinguished from all other parts of the body of the animal by the dull white-yellowish colour of its contents. Of this chylous substance, more is contained in the sacculi of the stomach than in the central-most spaces. The unelaborated alimentary fluid, as it enters the stomach along the channels of the vertical arms, is scarcely distinguishable in colour from the surrounding transparent gelatinous structures of which the body of the animal consists. This is significant of the fact, that it

is the stomach, which effects the reduction of the crude material. But notwithstanding the evidence of this fact, the microscope does not confirm the conclusions, to which it apparently tends. If the alimentary fluids from the lowermost parts of the canals in the arms be first examined, that is, the food immediately at its point of ingestion; and the same substance again be examined as it is found in the stomach; and, lastly, these results be accurately compared, under the microscope, with that contained in the respiratory net-work of vessels at the margin of the disc, the so-called blood; very trivial microscopic difference between them will be found to obtain. The accompanying view of these several specimens exhibits the cells from several situations.

Fig. 5.

RHYZOSTOMA. (Magn. 320 diam.)



- a. Corpuscles from the furthest end of the digestive tubes in the arms. They are orbicular and nucleated cells, varying very much in size, and always containing molecules, the largest about  $\frac{1}{1200}$  inch linear.
- B. Blood-corpuscle, resembling closely the chyle corpuscle, similar in size and structure, taken from the net-work of respiratory vessels at the margin of the disc.
- c. Shews the chyle particles as they are found in the stomach, and near the sacculi, which, there can be no doubt, furnish the necessary secretions for the reduction of the food. Nothing, however, can be found in these parts (the glandular segments of the digestive cavity) to prove the existence of any bile or other secretion whose physical elements present any distinctive marks under the microscope. Yet there may be some set of circumstances established at these especial localities, sufficient to impress upon the nucleated cell a new agency, by which a new secretion may be produced.

It is in this manner most probably that the biliary and other secretions in these inferior organisms are furnished; separate cells, rather than independent organs, being appropriated for the purpose.



- d. Thin section, of solid structure, of the disc. It consists, microscopically, of nothing but cells, here and there imbedded in a perfectly hyaline and structureless substance. The same microscopic appearance is presented by a thin slice of any part of the solid structure of the arms.

It is thus found that nothing can exceed in simplicity of plan the several stages of reduction, assimilation, and nutrition, as they are performed in this humble specimen of animal organization. The food—salt water and minute infusorial animalcules which swarm in every drop—is admitted into the tubular system of the arms; where, from all analogy, it is submitted to the agency of reducing fluids, furnished by the nucleated cells composing the parietes of these canals: it thence finds its way into the stomach, properly so called, where it is submitted further to the action of all the secretions, however elaborated, which are required to complete the transformation from the crude state to the organized condition of chyle. This is the exact stage, at which the chylous alimentary material is subjected to the agency of the biliary and other allied secretions. In what this agency consists it is difficult to conjecture, unless it be that the minute nucleated cells, abounding in the peripheral rugæ of the stomach, enact a part equivalent to the specialized functions of organs higher in the series and of greater anatomical complexity. It may be confidently anticipated that the time will come, when discoveries yet to be accomplished in the sphere, embracing the structure and physiology of cells, will render practicable the solution of problems, which now appear to the physiologist as unintelligible enigmas. Nothing in the science of organization can surpass in wonder the fact, that, in the same animal, nucleated cells, taken from the contents of the stomach, from the contents of blood-channels, or from the solid structures of the body, should display such intimate similarity of form and internal appearance, as to afford, even under the analytical eye of the microscope, no differential traits.

In the sterelminthous and cælelminthous entozoa the nutritive system consists of little more, as far as our present knowledge will enable us to state, than a mucous tract, terminating, for the most part, in cæcal extremities; portions of this mucous extension being appropriated, under some

slight anatomical modifications, to the purposes of glandular secretion. In these animals, separate provisions for the formation of bile have only imperfectly, if at all, been described. The ultimate conditions for the supply of glandular fluids in these degraded and simple organisms yet form an inviting, because untrodden, field of physiological discovery. To the researches of Dr. Arthur Farre science is indebted for valuable contributions on the minute structures of the bryozoa.\* On the observations of this excellent authority it is now generally taught that the brown specks, of a glandular description, dispersed over the parietes of the stomach, constitute the representatives of the biliary organs. These specks may consist of aggregations of nucleated cells, contrary to the supposition of Dr. Farre that they are follicles. In *bowerbankia densa*, that elegant bryozoon frequently found as a parasite on the common *flustra foliacea*, these incipient biliary organs are most favourably observed.

The hepatic system in the epizoa is yet little known among naturalists. In *actheres*, which infests the common perch (*perca fluviatilis*), a series of ligamentous cords embrace the alimentary canal, and tie it to either wall of the body, which are regarded as the rude beginnings of the liver. In *lamproylena pulchella*, however, a parasite, attaching itself to the gills of the chub (*cyprinus jesus*), a curious velvety coat encircles the intestinal canal throughout its whole extent, bearing an extremely close resemblance to a similarly-arranged structure in the common earth-worm, and which the best authors pronounce as the biliary organ in rudiment.†

In the echinodermata a greater speciality of structure and function is disclosed. In this comparatively highly-organized class of animals the same organ has, notwithstanding, to perform manifold functions; in other language, separate and individualized parts are not provided for independent endowments. This division of labour is characteristic only of the highest organisms. According as an appropriation of physical conditions is effected for the execution of the several essential functions of the organized

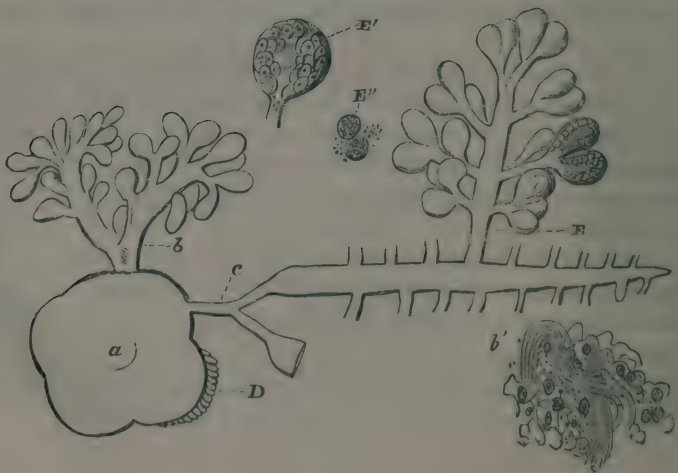
\* Philosoph. Transactions, Part II. for 1837.

† See Rhymer Jones's *Animal Kingdom*, Art. Epizoa; Professor Owen's *Lectures on Invertebrate Animals*; and *Museum of Animated Nature*.

body, so does observation shew that the animal is raised in the scale.

In *asterias*, accepted as the type of this interesting class, nervous, digestive, circulatory, and muscular systems, are marked with individuality. The glandular system, however, has received only an imperfect definition and incomplete development. No satisfactory and conclusive data have hitherto been laid down, on which to assign the precise physiological import of the anomalous appendages and extensions of the digestive apparatus of the *asterias*. Much ambiguity and doubt still exists in regard to the signification of those massive prolongations of the digestive sac which engage the rays; nor is it at all determined what is the office of that curious tubular appendage (fig. 6. *b.*) situated on the dorsal aspect of the stomach, and communicating with its interior at the fundus, while the canal leading to the cœcal prolongations in the rays have their orifices in the walls of the stomach in parts adjoining the œsophagus. It is important, at this place, to remember that there is a great disproportion between the diameter of these canals leading to the cœcæ of the arms, and the capacity of the stomach and the mass of the gland-like organ to which they conduct. This fact imparts to these appendages an independence of character, which may be regarded as just ground for recognising in them some higher office than that belonging to a simple extension of the digestive system.

*Fig. 6.*





- a. Stomach of *asterias rubens*, pouched at the parietes.
- D. A band of granular follicles discoverable on the walls of each pouch, probably gastric follicles, not hitherto described.
- b. Cœcal follicles of dull yellow colour connected with the fundus of the stomach in *asterias*, supposed, with great reason, by Dr. Grant, to be pancreatic. The terminal vesicles, according to my observations, are intransparent, with very dense parietes, and abounding in elastic white tissue: one vesicle is torn up, and shewn at *b'*, magn. 320 diam. The ultimate cells, entangled in a dense mass of elastic fibrillæ, are small, compact, and granular, very unlike those found in the cœcal prolongations of the arms, which are depicted at *E*, *E'*, and *E''*.
- c. represents the small tube by which the digestive diverticula (two in number) of the rays communicate with the stomach. These cœca consist of an axial canal, supporting leaflets at right angles: these leaflets are arborescent, and terminate in vesicles or dilated extremities, which are filled, as displayed enlarged at *E'*, with nucleated cells crowded with molecular contents: the ultimate cell is sketched at *E''*, measures  $\frac{1}{800}$  to  $\frac{1}{1000}$  linear. The ultimate organization of the raceme of follicles attached to the fundus of the stomach is unequivocally adverse to the supposition of its biliary nature. These results very decisively point towards the digestive prolongations of the rays as the organs destined and calculated, from their structure, to elaborate the biliary products from the blood. The ultimate cells exhibit marks of an essentially glandular character. There can be no doubt that these massive cœca enact an active, and the principal part, in the processes of reduction, assimilation, and nutrition.

But the resolution of these physiological difficulties has never yet been attempted by a systematic reference to the intimate organization of these excentric parts. If, in the *asterias*, the membranous stomach be carefully inflated with air, the lateral pouches of the organ expand very perfectly and beautifully; so that vertical lines of condensed tissue (D. fig. 6.) become evident. Under the higher powers of the microscope, these portions resolve themselves into obscurely-defined follicles; which, from their immediate relation to the digestive cavity and the symmetry and regularity of their arrangement, can fulfil no other purpose than that of supplying a solvent product, by which some preliminary stage is accomplished in the process of digestion. They constitute, undoubtedly, the gastric follicles; and seem to shew that, even for the production of this chemical solvent, which Liebig has characterized as the emanation of the entire mucous

surface, without distinction of localities, separate provisions are necessary; and that the function of elaborating the gastric fluid is as much a vital physiological process as the hepatic or the renal. It tends in no respect to the corroboration of the view, which accounts for the converting or solvent property of the digestive secretion by supposing a profuse shedding of epithelia.

A great discrepancy of opinion has long obtained among comparative physiologists with reference to the real use of the small follicular appendage, which, in the asterias, is connected with the fundus of the stomach, and is found generally near the white spot on the dorsum, which indicates the situation of the sand apparatus. In external characters, this appendage seems obviously entitled to the designation of a rudimentary liver (*b. fig. 6.*). Analyzed, however, under the microscope, it may be seen, with clearness and confidence, to possess no structural marks distinctive of the true biliary organ. It is composed, as already remarked, of closely-woven fibrillæ, of white elastic tissue, giving its parietes strength and density, wholly unlike the analogous parts in a true liver. Its ultimate cells likewise fail in those features almost universally characteristic of the hepatic. The suggestion of Dr. Grant, that it forms only an incipient pancreatic organ, comes recommended, after all inquiry, as the most probable. In an animal system so highly organized as that of the asteroid echino-derm it were contrary to analogy to call that secretion hepatic which is poured directly into the digestive cavity. The food must suffer certain rude reducing changes, preparatory to undergoing the agency of the biliary secretion, which impresses upon the chyliferous process its last and finishing change. Here the transformations in the alimentary substances cease to be merely chemical: they subsequently become vital and physiological. In this prepared state, the contents of the central digestive cavity enters the cœcal prolongations, there to receive, under the influence of the cell-machinery, provided in the terminal vesicles, a more elaborately and highly-organized condition; and, lastly, to be absorbed into the vascular system by the venous radicles, with which the parietes of these cœca are so profusely supplied. These prolongations of the digestive

system consist of a central canal, divided and sub-divided, until ultimately it ends in arborescent leaflets, with clavate vesicular branches. The dilated cul-de-sacs, which form the terminations of the canals, are filled with orbicular, nucleated, glandular cells, disposed most densely along the circumference of the vesicles, leaving a comparatively unoccupied axis in the central line. See fig. 6. E'. Whatever be the nature of the action, which these cell-filled vesicles exert upon the elements of the food, there is no reason to hesitate in designating these cœca as glandular reservoirs for the reception and detention of the prepared aliment, previously to its introduction into the system of the blood-vessels. The animal derives its nourishment from the elaborated contents of these cœca. Every feature in the anatomical character of these organs seems fairly to justify the conclusion, that the profusion of cells, with which the terminal vesicles are replete, is designed for the discharge of a function equivalent to the hepatic; and, as in the instance of glands destitute of excretory ducts, the product of their agency is carried away by the action of the venous radicles, by which the cœca are closely encircled. It is by the accurate decyphering of the processes, as they recur in these inferior examples of organized beings, that the great problem of nutrition, in the most complex, can be successfully solved. The question seldom occurs in prosecuting the subtle chemistry of those transformations, by which dead organic matter becomes again endowed with vitality; whether the nutrient material in the lowest is required to be subjected to the same influences, to be raised successively through the same series of organic metamorphoses, as in the highest animal. It were more in accordance with the great simplicity of plan, on which the bodily fabric of the lowest organism is constructed, to conceive that the materials necessary for the renovation of waste and the maintenance of life should bear the same simplicity of constitution. The organic exigencies and chemical composition of the polype are not yet so lucidly within the knowledge of the physiologist as to enable him to declare, with any authority, that, for the renewed fabrication of its uncompounded and elementary organism, salivary, gastric, pancreatic, hepatic, and renal secretions are agencies as



necessary for the complete preparation of its food as for that of the most composite animal. This is a wide field for novel investigation; and it may be appropriately distinguished as the department of comparative chemistry.

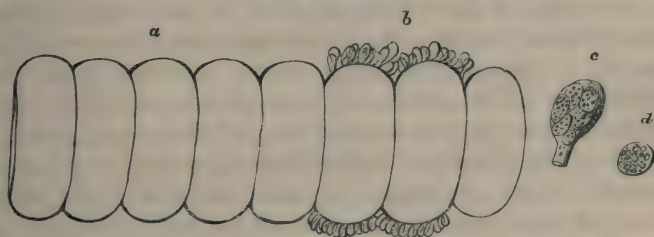
In the annellated class of animals the digestive and chylopoietic systems present indications of progressive development. The elongated conformation imparted to the body of the annulose animal involves an analogous figure in many of the component organs of the system. This characteristic of extension—length at the expense of breadth—belongs to the nervous, circulating, and alimentary systems. The mechanical disposition and arrangement of the digestive and intestinal tracts determine, in a great part, the configuration and position of the contributory glands. Evidence of the truth of this statement is afforded in the distribution of the respiratory and hepatic organs in the majority of the annelida. In the dorsebranchiate annellata, especially the nereidæ, aphrodite, and arenicola, the glandular apparatus for the biliary function is still unsatisfactorily determined; it is undecided whether the cæcal appendages of the stomach, which receive the alimentary pulp, provide also a secretion analogous to the hepatic; or whether, as an arenicola, the yellowish, flocculent, glandular stratum, which closely surrounds the posterior cæca, constitute the express structure for the elaboration of bile. In the writings of the highest authorities on comparative anatomy—those of Cuvier, his distinguished pupil Milne Edwards, the speculative yet laborious M. De Blainville, Professor Grant, Mr. Owen, and Mr. Rhymer Jones—similarly unsettled views in regard to the hepatic organs occur.

It is nevertheless susceptible of the clearest proof, from the history of the analogous elements in the sactorial and terri-colous annelides, that the yellow stratum of flocculent, granular, fragile substance, which encoats some larger or smaller part of the digestive or intestinal system, must typify the organic provisions for the supply of bile in all the other less known members of the class. In *serpula contortuplicata*, in *hirudo medicinalis*, in *lumbricus terrestris*, in *nais filiformis*, in *arenicola piscatorum*,\* the existence of

\* All these animals, at this season of the year, are found in great abundance on the shores and sands in the bays about Swansea.

this extended biliary coating around the intestinal canal is readily capable of demonstration. Nothing more, for this purpose, is necessary, than the careful exposure under water of the fresh body of the animal, by the longitudinal division of the tegumentary covering. Taking the common earth-worm (*lumbricus terrestris*) as the representative of the plan of organization, on which the annelidans are constructed, the following cut and description will serve as a clue to a knowledge of the biliary system in the whole class.

Fig. 7.  
(Magn. 320 diam.)



- a. Intestinal tube of the earth-worm (*lumbricus terrestris*), annulated like the tegumentary tunic. Its external covering is dull yellow in colour, and delicately villose and flocculent in texture. This coating consists (b) of flask-like appendages or crypts, held by tubular peduncles, with which a group of crypts communicate, and open thus, by coalesced excretory conduits, into the channel of the intestine. The flask-like crypts are distinctly enclosed in a membrane of extreme tenuity, by which their figure is given them: their interior is filled with granular cells (c and d), which are gorged with oily globules and granules, and probably a nucleus, although its existence cannot be readily demonstrated (d, magn. 320 diam.). The internal side of the intestine is lined with a thick coating of epithelia.

In this familiar animal the liver has received apparently a very precocious and disproportionate augmentation, when viewed in relation to the size of the body, and the organs subservient to other functions.

The alimentary canal is long and capacious, obviously in consequence of the necessity, which must here exist for a prolonged and laborious churning operation, in order to effect the separation of the decayed vegetable and animal substances mixed with the common earth, which the worm

appears to swallow in considerable quantities as food. In this process of mechanical extraction, the whole intestinal tube, by its vermicular movement, assisted by the tenacious adherent epithelial secretion furnished by the internal lining cell-clad membrane of the canal, evidently plays an active and important part. The lining membrane, with its composite apparatus of cells, is probably secernent and absorbent at the same time. Just as the villi and lieber-kuhn follicles, so intimately blended in the small intestines of the human subject, absorb the chyle, and, at the same time, eliminate a fluid, active in the work of assimilation, the lining interior of the intestine in the worm supplies at once a solvent and adhesive secretion, the earthy rejectamenta being rolled up into an elongated pellet, and urged outwards along the central axis of the canal. It is upon this chyliified pulpy substance, adhering to the periphery of the intestinal cylinder, that the secretion wrought by the stratum of yellow gland-like organ, encasing, as an external pannicle, the whole extent of the intestine, is more immediately brought to operate. In organization this yellow fleecy substance answers, in all its detail of structure, to a biliary organ; and it is impossible to doubt that this is the apparatus endowed in this animal with the property of secreting bile; but whether, in the extreme simplicity of organization presented us in these inferior beings, any additional duty is required of this singular structure, it is difficult, if not impossible, to ascertain. Regarded as the exclusive organ of the bile, it cannot be doubted to possess a disproportionate magnitude and extent. As formerly observed, the diffuent character of this hepatic gland may result as the unavoidable consequence of the extended sphere, from the very nature of the food, over which the chyliifactive operations of the alimentary canal are distributed. The very figure of the lobes or acini of this biliary structure establishes conclusively the existence of a basement membrane as the containing bounds of the nucleated cells, grouped in uniform minute papillary masses on the exterior of the intestine.\*

\* A short but excellent paper has recently been published in the Medical Gazette, by Dr. C. H. Jones, of St. George's Hospital, on the Structure of Glands; in which he incidentally alludes to the structure of the liver in the



The question raised by every observer of the anatomy of the annellata, whether the large cœca, as seen in the leech, proceeding from the lateral parts of the stomach, discharge an office analogous to the biliary, seems capable of decision by referring to the situation, size, and dependence of the yellow liver-organ in the instances in which the cœcal appendages are present, and by comparing the results with those in which they are absent. In *arenicola piscatorum* the cœca of the alimentary canal are entirely absent, except two little flask-like cysts, placed at that end of the œsophagus which adjoins the stomach; and here it is found that the biliary gland is extended, as in the earth-worm, encasing, as a fleecy stratum, the whole gastro-intestinal tube; and, with respect to the function of this layer of gland, and that of the enclosed canal, it is impossible to doubt that active chylofactive operations take place under their limited agency. In fact, there is no other organ or function discoverable, upon which this process, so essential to the well-being of the animal, can devolve. Let it now be examined what modification in the chylofactive proceeding the mere addition of the cœca can introduce. The *aphrodita acealata*, or sea-mouse, and the common leech, are conspicuous examples amongst the annelidans for the large sacculations which occur in the gastro-intestinal canal. For minute examination, let the leech be selected as the more familiar of the two. The illustrious John Hunter, whose shrewd eye in the perception of structural analogies was almost infallible, has actually put up in the Hunterian Museum the gastro-intestinal canal of the aphrodite, with its lateral cœcal appendices, for the express purpose of displaying the earliest indication of a special biliary system discoverable in the animal series. It is quite unnecessary, before the tribunal of modern anatomists, to argue against the extravagance of the supposition of Hunter.

earth-worm, and denies the existence of a liminary membrane around the groups of granular cells composing the liver-layer. My observations have led me to results, stated and represented in the text, entirely different from those announced by Dr. Jones. But a little reflection would suffice to convince the anatomist that the very position of the biliary gland in the earth-worm, exposed to mechanical rubbing from the incessant contractions of the muscular tunic of the body, if microscopic examination did not demonstrate its presence, would require a protective covering.

To conceive that such vast foldings of the mucous system can be required in so simple and diminutive animals as these, for the subordinate office of preparing a chylofactive biliary fluid, is adverse to all the lessons of analogy. But Hunter does not stand alone in the commission of this great error. M. De Blainville, Carus, Brandt, Cuvier, Grant, and even Professor Owen and Mr. Grainger, in their respective works, have, without exception, recognised in these voluminous cœca in the gastric canal of the aphrodite and the leech the rudimentary condition of the liver. A resort to the microscope will most satisfactorily dissipate these erroneous propositions. The annexed cut represents the true glandular elements in the leech upon which the function of elaborating bile unquestionably devolves.

*Fig. 8.*

HORIZONTAL SECTION OF THE STOMACH AND ITS CŒCAL APPENDAGES  
IN THE LEECH.

*Magn. about 100 diam.*

*Magn. 320 diam.*



- a.* A portion of the stomach of the leech, with four cœcal appendices (*b*).

A bisection of the canal is made horizontally, with the view to display the granular cells, which are seen in great profusion on the internal mucous lining of the contracted and saccular portions of the stomach. One of these microscopic glandules is shewn at *c*: it is an oval body, placed as near as possible to the free surface of the mucous lining of the stomach. They are observed in equal abundance from the anterior to the posterior extremity of the stomach, abounding on the constricted and sacculated portions equally; proving that no structural difference whatever exists between the cœcal appendices and intermediate

constricted parts; and by a fair inference, that no difference of function exists between these parts, contrary to the supposition of all naturalists. The ultimate glandule (*c*,  $\frac{1}{1000}$  linear) is filled with oily granules: there is a pellucid spot to be seen in the centre of the oval, which, beyond doubt, is the neck and orifice of the vesicle. These vesicles resemble, in a very striking manner, the hepatic cells in the human body: they equal them in size, and correspond with them in the brown colour, differing in the presence of a pellucid spot on the centre of the leech-cell. There can be no doubt, from their position, figure, and structure, that they possess a liminary membrane, forming the involucrum of the crypt-like cell.

No difficulty occurs in bringing into view the beautiful and extraordinary system of glands connected with the mucous membrane of the gastric canal in the leech. All the enclosing and obscuring tissue must be completely dissected away, and the stomach and the appended cæcum laid open. The part should be now moistened with dilute spirit, and a thin piece of glass applied, and pretty forcibly pressed on its surface. The specimen becomes thus transparent, and the layer of biliary glandules rises conspicuously into view. They measure about  $\frac{1}{800}$  to  $\frac{1}{1000}$  inch linear. They pave, in a tessellated manner, every part of the sacculated stomach. The constricted portions display them in equal beauty and number with the cæcal appendices. No difference in their anatomical character and distribution is seen in the posterior large cæca, which adjoin the origin of the intestine. They are, however, almost entirely absent on the parietes of the short intestine, properly so called.

These facts leave the conclusion incontrovertible, that no distinctive functional endowment exists in the case of the cæca, as compared with that of the constricted intermediate portions of the gastric tube. These facts indisputably prove that the whole digestive organ is a structural and functional unity, every part, whether follicular or not, being identical with, and only a repetition of, the other. The cæcal appendices may subserve the purpose of detaining the alimentary material under the agency of the parietal glandules; but they furnish no different secretion from the other portions; and the physiological character of the stomach in these animals would remain precisely unaltered if it were converted into a uniform unsacculated cylinder. Between the



earth-worm, which typifies the families of annelides in which the gastro-intestinal canal is a plain cylinder, and the leech, which represents those distinguished by the sacculation of the same canal, there is no other difference than this—that in the earth-worm the liver-glandules, as a stratum enclosing the whole canal, consist of follicles more compound and developed than the biliary cellules of the leech. If several of the hepatic cells of the leech were aggregated together, and bounded by a flask-shaped limitary or basement membrane, they would form precisely the more highly organized hepatic crypt of the earth-worm. In the earth-worm, then, the absence of cæcal multiplications in the stomach appears to be compensated by a concentration of parts in the biliary system.

In the myriapodal class a most remarkable advance is made from the distributed type of the biliary organ in the annelides to the tubular variety found in insects. They consist of long filamentous tubes, communicating, as in insects, with the gastric division of the alimentary system.\*

In organization, the insect class in the animal series affords to the physiologist and the mechanician wondrous illustrations of the adaptive capabilities of the living organism. In the structure and habits of insects the mechanician remarks locomotive instruments elaborately compound, and producing results surpassing the most refined calculations. In the miniature frames of these perfect beings the physiologist discovers, in the structure of individual organs, an admirable adaptation of a single instrument to the attainment of several purposes. The tracheal apparatus is a perfect example of the power so frequently and inimitably displayed in the contrivances of the animal body, by which manifold ends are secured by one simple provision. Concentration and diffusion appear to belong, at one and the same time, to the

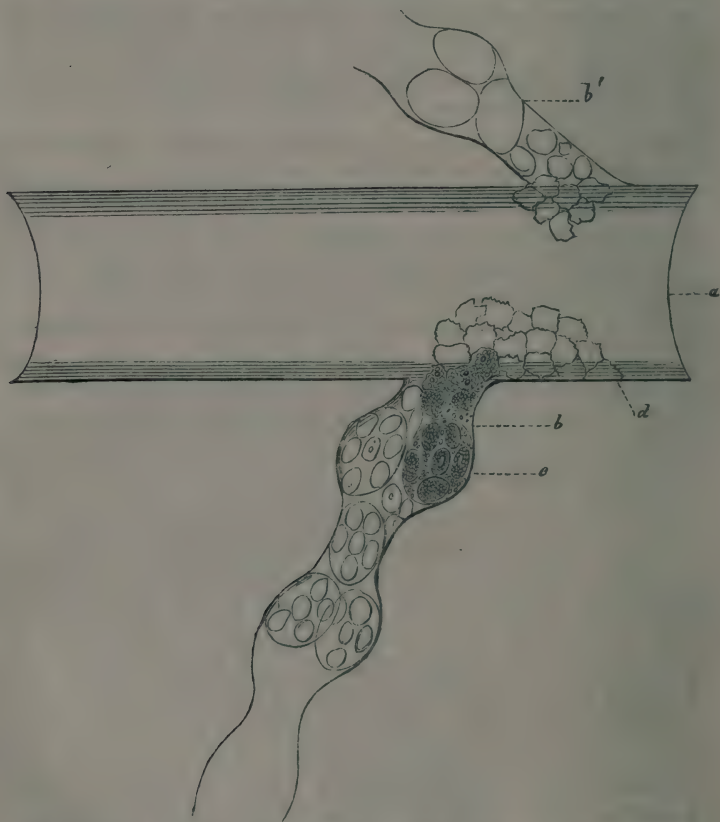
\* No opportunity has yet been afforded me to examine with the microscope the ultimate anatomy of the biliary tubes in the myriapoda. For the account in the text I am indebted to Rhymer Jones's excellent article on myriapoda in the *Cyclopedia Anat. and Phys.* But it is manifest, from the tubular form here described, that the hepatic system of these insectiform animals can have no relation whatever with the hepatic organs of the annelides, above which they are immediately located in the animal scale by the best naturalists. It argues well the practical difficulties of classification.

hepatic system of insects. A narrow tube, more or less elongated, rolled about, and diffusedly disposed in the abdominal segment of the body, constitutes the typical plan of the liver in the class of articulate animals. These hepatic tubuli vary in number and character. It is said that in carnivorous species, as in *cicindela* and *cimex*, the biliary vessels are least developed; and that in the phytophagous varieties, as in *melolontha*, it acquires the greatest magnitude. In number they range from two to eight, four being the ordinary number, and communicate with the pyloric extremity of the stomach; but, in the majority of cases, in a circle, at the commencement of the small intestine. Frequently the tubuli are single throughout; sometimes, however, they are found united by direct inosculation at the distal ends. Entirely different from the hepatic system of glands, Müller, Treviranus, and Burmeister have discovered that the salivary organs in insects assume a conglomerate character. There is therefore no difficulty to be encountered in the detection and dissection of the biliary vessels in these animals, although so minute. From the laborious dissections of Burmeister and Mr. Newport, the liver-tubes, in nearly all cases, may be described as simple cylinders, that is, tubes with plane sides. This, according to the representations given by these excellent authorities, is the case in *carabus monilis*, in *calosoma sycophanta*, in *calandra sommeri*, in *lucanus cervus*, in *sphinx ligustri*, in *pontra brassicæ*, and many others which might be mentioned as examples. There is, however, an instance depicted by Mr. Newport—the larva of the *sphynx ligustri*—in which the hepatic vessels are remarkably multiplied by cœciform appendices to the sides, which, if his observations be accurate, entirely disappear on the attainment of the pupa maturity. This temporary condition described by Mr. Newport approaches, in a very intimate manner, to the permanent state found in the *musca domestica*, which is here selected, from its prevalence and familiarity, as an illustration of the microscopic or ultimate structure of the liver in insects. The hepatic vessels in the common house-fly, under ordinary inspection, are found to consist of long ravelling filaments, characterized by no distinctive colour, and communicating

with the intestine, to the extent of four in number. When placed under the inferior powers of the microscope, what appeared before as a simple uniform cylindrical filament, now becomes knotty, marked, that is, by a succession of ovi-form dilatations alternated by contractions.\* This is the anatomical form of each of the hepatic tubuli in this insect: there is no difference between the distal and proximal portions of the tubulus. The following sketch will convey an exact view of these parts.

*Fig. 9.*

SECTION OF INTESTINE AND BILIARY TUBES OF THE COMMON HOUSE-FLY  
(*MUSCA DOMESTICA*).



\* Of course I can only speak positively of this individual example, which I have examined with the greatest care; but it strongly occurs to me, from



*a.* is the intestine in section; the internal epithelial coating of which is represented at *d*. The scales are irregularly polygonal and flat: those adjoining the termination of the hepatic vessel (*b*) are charged with flat globules. With the one-fourth power they are beautiful objects. The hepatic tubes (*b*, *b'*) are beaded in general appearance, consisting of a succession of contractions and dilatations. The tumified parts, as at *c*, are filled with large compound cells, replete with secondary cells; and these, with brown-yellow granules, characteristically hepatic. The secondary, which constitute obviously the active secerning agents, measure about  $\frac{1}{8000}$  linear, and resemble those of the human subject. These compound cells, of which the involucre or limitary membrane is extremely fine, are strikingly analogous to the compound cells found in the biliary tubuli of crustaceans. They contain, in the insects, five or six secondary cells, disposed concentrically about the nucleus. They are found, for the most part, only in the dilated portions; the secondary cells being found in the contracted parts. The importance of a basement membrane is rendered evident by this example of glandular structure.

It is observed that the interior of the hepatic tube is filled with cells of peculiar configuration, which contrast markedly with the pavement epithelium lining the adjacent portions of the intestinal canal. These epithelia, when inspected as a transparent object, present a most beautiful appearance: they are charged, in those parts of the canal near the termination of the biliary tubulus, with globules of fat, in addition to the small transparent granules, by which only their cell-chamber is occupied in other situations. The bile-tube itself is seen to present an alternate series of contractions and dilatations, the bulbous portions are crowdedly filled with compound cells of considerable dimensions, so large that two or three will fill the whole tube at its expanded intervals. The limitary membrane constituting the parietes of these primary cells is remarkably delicate and transparent, and low in its refractive power, so that it may readily elude the observation of the microscopist: its existence, however, is demonstrably certain. The arrangement of the secondary cells, the presence of a conspicuously defined

reflecting upon the frequent expedients adopted for multiplying glandular organs, that sacculations similar to these will also be found in other instances. I cannot subscribe to the assertion of Mr. Newport, that fluids can and do traverse the longitudinal extent of these biliary vessels of insects. They are too crowded with cells to permit the possibility of such an occurrence.

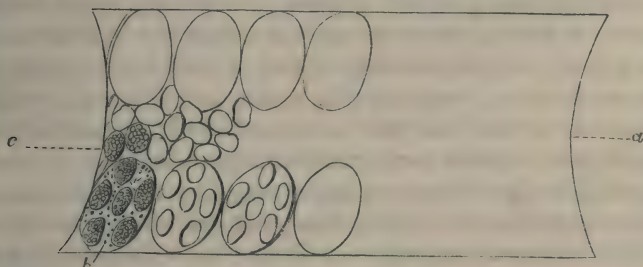
nucleus, around which the second series is concentrically adjusted, independently of the visible reality of the involucre, are proofs which render its existence unquestionable. The secondary cells are oval bodies, vary from  $\frac{1}{600}$  to  $\frac{1}{800}$  inch linear, and contain brown biliary molecules, with here and there a globule of fat. The intermediate spaces between the second-rate cells, or what should be emphatically called hepatic cells, is occupied by a blastema, or liquor sanguinis, from the elements of which more immediately the biliary granules in the interior of the secondary cells is elaborated. The office and direct purpose of the limitary membrane of the primary cell may consist in separating from the blood this preparatory material. It is certain that the hyaline membrane, which constitutes universally the walls of nucleated cells, and the sustaining stratum of all the superficial epithelia of the body, is silently engaged in the fulfilment of a physiological or dynamic purpose, more important in all glandular operations than physiologists are disposed to conceive. It is a sort of vital filterer, which permits the passage in the direction of the cell-chamber of those elements of the blood appropriate to the promotion of its especial function, to the refusal of those unsuited. It may be argued with great probability that the dilated portions of the biliary tubulus of the house-fly confirm the speculations of Mr. Goodsir with reference to the existence of a glandular nutritive or germinal spot. Against these conceptions of Mr. Goodsir it must, however, be contended, that in this instance the germinal spot is prodigiously pluralized, and that these data go little way to establish the soundness of his views, inasmuch as they are situated at the sides, and not at the extremity of the tubular follicle, as the conditions of his theory would seem to require. There appears to be, notwithstanding, some striking concentration of action at these expanded parts; each bulb should be evidently regarded as a perfect gland, as a perfect whole, and each bulbous portion only a repetition of the other. The tubular disposition of the hepatic glands in insects can be construed as determined by no other law than that of mechanical expediency.

In insects, however, there is another variety of the biliary vessels, in which the tubulus is perfectly uniform in calibre,

presenting dilatations and contractions in no part of their extent. An exemplification of this variety of hepatic gland is afforded in the moth tribe. In the common goat-moth the following deviation from the moniliform type may be readily ascertained, and this may be taken as the exemplar of the cylindrical description of biliary vessels.

Fig. 10.

PLAN OF BILIARY VESSEL OF THE GOAT-MOTH.



- a. Section of hepatic tubulus, shewing a uniformity of calibre, contrasting strongly with the beaded vessel of the house-fly.
- b. Large compound cells, the counterpart of those found in the dilated portions of the bile-tube in the house-fly, containing secondary cells, filled with brownish-yellow granules. The axis of the tubulus appears occupied only with the smaller secondary cells, which have probably escaped from a pre-existing generation of primary cells. It is plain that there is no essential organic difference between this form of vessel and that which presents the contracted and dilated figure. In the latter case the tubuli are longer, and more slender; so that the primary cells apparently cause, by their aggregation in clusters, the dilatations which the vessels exhibit at regular intervals.

It does not appear impossible that the contracted and dilated portions may change places under the alternate growth and debiscence of the primary cells.

This variety, when placed in juxtaposition with the preceding, proves, in a most interesting manner, how completely a unity of principle in glandular organization may be preserved under endless diversities of external form. Every minute section of this elaborately-organized tube must constitute a gland, *totum integrum*. The extension of surface, however great, it is quite intelligible, from these examples, is nothing else than a repeated superposition of

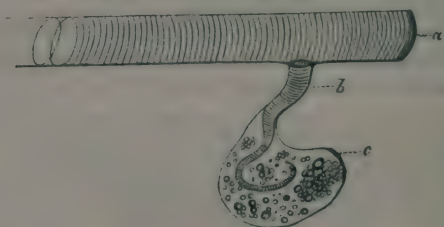


similar elements. It is only with diffidence and reluctance that a statement of any generality can be ventured upon foundations so limited as those developed in this paper. The whole of this most interesting class of animals, mighty and wondrous engines compressed into miniature dimensions, which demands for their inimitable mechanism admiration still more unbounded, deserves of the physiologist examinations more extensive and scrutinizing than any of which they have yet been the subject.

There is one subject connected with the physiological history of insects which the author is desirous to allude to in this place. Whilst pursuing other researches on the tracheal system of insects, especially in moths and butterflies, it was constantly found that the ultimate coiled terminations of the tracheal vessels were enclosed most accurately in a system of flask-shaped vesicles, containing globules of brilliantly-coloured yellow fat. The best authors on entomological anatomy are entirely silent as to the very existence of these curious structures. Mr. Newport regards the adipose tissue in insects as connected with the circulating system. Oken, Burmeister, and Treviranus annex the system of cells containing the fat to the biliary functions of the body; but there can be no doubt, from the relations and dependence of the oil-cells with regard to the tracheal system, that they should be viewed as associated, in some way or other, with the respiratory process.

*Fig. 11.*

PLAN OF FAT VESICLES ENCLOSING THE TERMINATIONS OF THE TRACHEAL VESSELS IN MOTHS AND BUTTERFLIES.



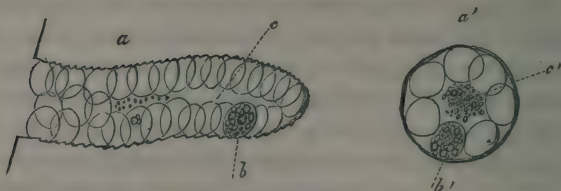
- a.* Tracheal trunk.
- b.* Branch, coiling and terminating in a very fine extremity.
- c.* Florence-flask-like bladder of fat, the containing particles being brilliantly yellow. The end of the trachea is quite in the interior of the fat vesicle, and mixed up with the oily globules. Should the yellow colour of the fat in these parts be considered as imparting to the adipose vesicles a biliary character?

The above representation strongly supports the probability of the view which regards the fat of these cells as fuel for the oxidizing process—a reserve-store for consumption when the system, the solid organs of the body, would otherwise be exposed to the destructive agency of the oxidizing air.

Advancing further in the consideration of the articulate sub-kingdom, the crustacean genera are encountered. These animals being exclusively organized for residence in water, the glandular systems present corresponding peculiarities. It is not an improbable supposition, that in the inordinate proportions of the liver in the majority of crustaceans a compensation may be recognised for the absence of the salivary glands. It were unphysiological to suppose, with Mr. Gray, that since draughts of the liquid element in which they live enter the digestive cavity with the ingesta, the necessity of a salivary secretion is superseded. The other glands, such as the hepatic, may be required vicariously to elaborate a surplus proportion of fluid secretions for the intestinal process of assimilation, and thus explain the unusual magnitude of the liver. The inferior genera of crustaceans offer the most favourable conditions for the determination of the ultimate organization of this important gland. In the common shrimp—*crangon vulgaris*—and the prawn—*palemon serratus*, exemplifying the lower genera of the *macrourous decapods*, the intimate structure of the biliary organs may be most satisfactorily and readily unravelled. In both these sub-genera the proximate elements of the hepatic gland consist of cœciform tubes, clustered with symmetrical regularity on uniting ducts. The follicular principle is universal in its application to the liver of the lowest as the highest crustacean articulata. In the shrimp and prawn the tubes of the biliary gland, when skilfully placed under the microscope, so that not the least pressure from the superimposed piece of glass be exerted upon them, may be very successfully analyzed, from their transparency, even with the higher powers of the microscope. The subjoined plans are drawn from observations thus carefully conducted.

Fig. 12.

## BILIARY TUBE OF THE SHRIMP.



*a'*. Transverse section.

- a*. Biliary cœcum or follicle taken from the common shrimp (*crangon vulgaris*) and the common prawn (*palemon serratus*): it is seen to consist of a simple homogeneous basement or limitary membrane, covered internally by extremely minute epithelia and granules. The cylinder of the tube being crowded with large, distinct, nucleated cells, of an orbicular figure, and containing a considerable quantity of oil and molecules. The centre of the tube slightly less filled than the sides, shewing a parietal disposition in the cells. The cells in shrimps and prawns are not distinguished by the brilliant yellow colour of their contents, as in crabs. The cells measure, in these instances, about  $\frac{1}{500}$  to  $\frac{1}{300}$  inch. It is important to remark that the distal *cul-de-sac* of the follicle contains cells of equal size with those at the proximal end. It was only occasionally that the terminal end of the crypt could be seen to be occupied by free cytoblast and blastemal material not organized into cells. In such instances the theory of Mr. Goodsir about the "centres of glandular nutrition" received apparent support.

The simple follicular glands are admirably exemplified by these very accessible illustrations. The essential elements are here disposed before the physiologist in the most intelligible and least involved form—a simple follicle; the wall of which consists of a hyaline partition, placed between the fluid materials of the blood on one side, and active nucleated cells on the other. In the hepatic cells in all crustaceans the adipose globules constitute a very considerable part of the secretion. In addition to the fat-particles, however, minute colourless granules exist, which undoubtedly should be regarded as the true biliary constituent of the cell-secretion. It will be subsequently seen that this is the precise element which undergoes variations of colour in the various genera of the crustacea. As these specimens present by far the most conclusive facts, in relation to the true disposition of the glandular elements in the liver of this class of animals, it is



desirable to examine, in this place, into the grounds on which the theory of Mr. Goodsir is based. However scrutinizing and careful the investigation, nothing peculiar and distinctive can be discovered in the parietes at the end of these biliary follicles—no condensation of structure, no granulation. The extremities of these tubes are not always fusiform or tapering, as represented in the plates of this distinguished observer. On the contrary, it may be alleged as a rule, in reference to their conformation, that the diameter is throughout uniform. Proceeding to the examination of the interior cells and cytoblast, observation will prove it impossible to admit, with Mr. Goodsir, that the remotest end of the tubulus is always the scene of undeveloped cells, granular material, &c. In many instances the dissolution of the cells from mechanical injury will create this granular aspect in the contents; but when the utmost delicacy is observed in bringing the cœcal end of the follicle into the field, expedients having been adopted to prevent destruction from the weight of the piece of glass, large nucleated cells, identical in figure and size with those observed at the proximal portions, may be remarked in this situation. The truth seems certainly to be, that the evidence, which Mr. Goodsir adduces as the foundation of his hypotheses of nutritive centres, is unsatisfactory and inadequate. Addressing ourselves to the consideration of the question rationally, it at once occurs as contradictory to the multiple principle which obtains universally in glandular organizations. If the object be to ensure an extension of operative superficies by the duplication and re-duplication of the basic element, the membrane, the concentration of the nutritive or glandular forces to a circumscribed spot at the extreme end of the follicle would only prove these elaborate foldings of structure to be superfluous. All the other parts of these long and highly-organized tubes being thus nothing else but an excretory channel, such inferences, *prima facie*, are stamped with improbability. Each point of the follicular parietes to which a compound glandular cell is affixed constitutes a focus of energy which is in reality multiplied by the number of cells occupying the tubular walls. In this light an hepatic follicle, organized on the complex yet simple law enunciated in these diagrams and descriptions, becomes a compound

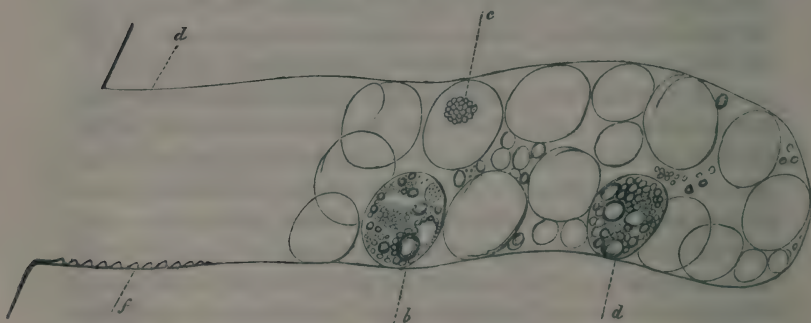
organ composed of as many *foci* of action as there are cells attached to the internal parietes.

In the highest brachyurous families of crustaceans the biliary system offers to the comparative anatomist no divergence in principle from the lower varieties of the decapod family, the biliary glands of which have just been described.

The common lobster furnishes a striking illustration of the multiple law, each component follicle, or cœcal tubulus, being precisely the same as those represented as belonging to the shrimp and the prawn: yet these follicles in the macrourous decapod are increased in number to such an extent that an aggregate mass of gland of considerable size is produced. In the ultimate cells in the bile tube of the lobster, like those of the shrimp and the prawn, no brilliant yellow granules are anywhere to be found: the mass of the organ is, notwithstanding, tinged yellow; the colour doubtless resulting from the accumulation of the granular material in mass, which appears colourless when viewed in minute portions. There is, nevertheless, an obvious difference between the ultimate colouring matter and its disposition in the cell in the liver of the lobster and in that of the crab. The same difference will probably be found to obtain prevalently in other members of the brachyurous and macrourous decapods.

*Fig. 13.*

BILIARY TUBE OF THE CRAB.



- a.* Biliary follicle in the crab (cancer pagurus).
- b.* Primary hepatic cells, containing, in some instances, a granular mass (*c*) of brilliantly-yellow granules, surrounded by voluminous

oil globules (*d*), which, in many of the cells, alone fill the cell chamber. A nucleus is also observable in these cells. The cells at the extremity of the follicle are similar in size and character to those at the proximal portions. The axis of the follicular cylinder is generally occupied by the contents of the dissolved primary cells. The biliary follicles and cells in the crab differ from those of the lobster in no other respect than in the absence of the yellow colour from the cells of the latter. In the bile cells of the lobster the true biliary granules are colourless, and diffused through the cell chamber, and indiscriminately blended with the fat globules; whilst, on the contrary, in the crab, as described, they are aggregated into conspicuous masses in the interior of the primary cell. These yellow masses must not be confounded with the colourless nucleus of the large cells. The large cell will elude the eye of the observer under the use of the high powers. They are best seen with the  $\frac{1}{2}$  and  $\frac{1}{4}$ . They measure about  $\frac{1}{300}$  to  $\frac{1}{400}$  inch linear.

It is at present impossible to account for the presence and absence of colour respectively in these cases. It has already been satisfactorily shewn that the yellow colour does not necessarily belong to the biliary secretion. In general appearance it ranges from a white opaque fluid to the brownish green and brilliant yellow. It is difficult here to refrain from observing the constancy and profusion of fat in the hepatic cells of the crustacea. On cursory examination, the whole secretion appears to be composed of fat alone. In the lobster, shrimp, and prawn, this conclusion would be the more readily adopted, in consequence of the absence of the yellow clusters of granules. There is a more intimate connection between these compounds of hydrocarbon and the true choleic secretion than organic chemistry has yet succeeded in establishing. In no instance of glandular structure is a more striking demonstration given to the physiologist of the dynamic importance of the hyaline membranes in these organs. It may be observed, in these well-defined examples of the hepatic follicles of the crustacea, that two layers of hyaline membrane are interposed between the active interior of the cells and the blood on the exterior of the follicle. Vital selection and percolation are rendered complete.

In progressively unfolding the gradations of outward form and intimate construction, which an individual organ under-

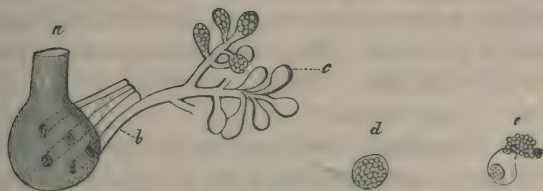


goes in the successive divisions of animals, from the least to the most complexly organized, examples are not unfrequently encountered, in which the organ tracked in the scale anomalously retrogrades. A comparison instituted between the compound apparatus, which constitutes the liver of the superior crustacea, and the stomachal biliary crypt of the *cirrhopoda* will confirm the propriety of this remark. In these molluscs the hepatic system consists, for the most part, of a series of superficial cœca, which intersperse the dense parietes of the large stomachal receptacle, and discharge the chylific secretion thus directly into the digestive sac. The points of communication between the biliary ducts and the alimentary canal are so illimitably various, that problems of great ambiguity and difficulty are constantly raised for the consideration of the organic chemist. On the subject of digestion most irreconcilable and discordant opinions distract and divide the physiologists and analysts of the day. Such data as those above opened to observation significantly predict that chemistry and physiology, viewed as allied sciences, will yet owe much to the simple and suggestive lessons worked out by the accurate zootomist. In the brachiopoda, according to the laborious and accurate dissections of Professor Owen, the hepatic organ consists essentially of numerous secerning cœca, as yet easily separable from each other, distributed over the walls of the stomach and communicating with its cavity by open mouths. In the tunicated molluscs, the liver presents another of those retrogressions to which we have previously alluded. In these singular molluscs this organ suddenly reverts, in anatomical character and situation, to the degraded circumstances under which it was found in the annellata—the earth worm and the leech. It assumes, in the tunicata, the simplicity of a glandular follicular mass, disposed as an external covering over the intestinal canal, adherent to its external surface, but opening probably, as the rule would require, by means of ducts into the stomach. Andouin and Milne Edwards have described the biliary organ in some ascidians as follicular appendages to the stomach, rendering its external coat shaggy in appearance. In conchiferous mollusca, without exception, the liver, which

assumes the form of a conspicuous visceral mass, is composed proximately of an aggregation of elongated tubuli, blended intricately together, and terminating in acini, or lobuli-like dilated extremities. The ducts undergo division and subdivision, the larger multiplying by ramifications when traced from the stomach peripherally, and conversely when followed centrically: the canals successively unite, until the number is reduced to three or four, communicating by patent orifices with the stomach. This anatomical relation of the hepatic system to the stomachal receptacle obtains very prevalently in the conchifera. The functional modifications entailed by varying the point at which the glandular secretions are added to the chylic contents of the alimentary canal, neither chemistry nor physiology has hitherto succeeded in determining. Among the lamelli-branchate molluscs, the biliary organ of the common oyster may be selected for minute examination. The annexed cut represents the results.

Fig. 14.

OYSTER.



- a.* Portion of œsophagus and stomach of the common oyster. In the stomach, which is laid open, the orifices of the hepatic ducts are seen. These ducts (*b*), when traced outwards towards the mass of the liver, divide and sub-divide, until they ultimately end in flask-shaped terminations (*c*). These are agglomerated together into a solid mass, by means of delicate reticulate structure. On the surface of the organ these bottle-figured vesicles are marked, from mutual pressure, by polygonal outlines. They do not correspond with the lobuli in the liver of the human subject. These latter are compound in structure. These vesicles measure about the  $\frac{1}{10}$  or  $\frac{1}{14}$  inch linear. They are filled with true hepatic granules, which are represented (magn. 300 diam.) at *d* and *e*. *d* shews the cell in integrity, filled with brownish granules of distinct form. *e* is the same cell ruptured, shewing the nucleus, and one or two refractive oil globules.

In this animal the biliary organ is observed to approach the character of individuality and independence which distinguishes the glandular system of the vertebrata. The constituent elements of the gland are bound up by appropriate tissue into a conspicuous compound organ. It is only at this advanced stage of the inquiry into the history of the liver that the organ is found to occur under a constant and invariable principle of construction. In the subsequent gradations of general form, still numerously diversified, the ultimate elements of the organ will, notwithstanding, range in essential disposition under a common plan. The involucrum of the hepatic cell in the oyster is wrought out into extreme tenuity, so that the demonstration of the perfect cells is matter of no slight difficulty. For this reason it may easily be thought that the contents of vesicles is not contained in properly organized cells, and consists only of a shapeless mass of amorphous granules. The cells dehiscence with great readiness, and thus discharge their heavy load of glandular molecules into the excretory ducts. A tendency to dehiscence is the invariable characteristic of all ultimate glandular cells. The adipose elements in the biliary cells of the oyster are scanty, and seldom attain the size of an obviously developed vesicle. The description above given applies correctly, in almost every particular, to the biliary organ of the common mussel.

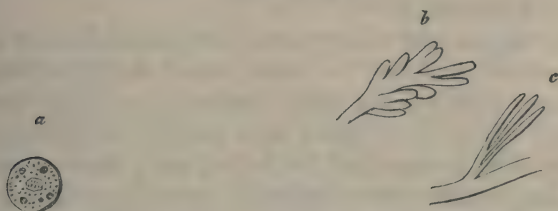
There is a remarkably close analogy between the liver of some of the gasteropods and that of the lamelli-branchiate molluscs just examined. In all the gasteropoda this organ constitutes a voluminous gland, numerously subdivided into lobules, and distinguished functionally by the peculiarity of secreting bile exclusively from arterial blood, which is returned by a system of veins corresponding with the hepatic. The bile ducts communicate by perforations, for the most part, with the commencement of the small intestines; sometimes however, with the digestive cavity. In the common snail the liver attains a great comparative size, composed of four large lobes, each separable into lobules, and these again into vesicles, replete with secreting cells. This typifies, with complete accuracy, the structure of the gland in the slug, in *vaginulus*, in *scyllæa*, *sestacella haliotoidea*, and *onchi-*



dium. In the common slug, the hepatic terminate ultimately after the manner of a bunch of grapes, the terminal dilations appearing prominently under the shape of acini or lobuli. They constitute truly, however, only vesicles, as represented in the case of bile-gland of the oyster—see Fig. 14—charged with glandular cells, as exhibited in the following sketch.

Fig. 15.

GASTEROPODS.



- a.* Ultimate hepatic cells from the liver of the slug (*limax*). It is a large orbicular body, having a centric nucleus, and containing amorphous granules and adipose globules in limited number. In the liver of the slug this will be found to be the prevalent variety,  $\frac{1}{800}$  to  $\frac{1}{1000}$  inch linear; yet others appear, in which the contents are so crowded, as to intercept the light, viewed as a transparent object; and still others in which the contained elements are unusually scanty, giving to the cell a very diaphanous character.

These cells are frequently seen to be disposed in linear series, corresponding with the channel of the ducts.

- b, c.* Modes of termination of ducts in gasteropods.

In this instance, although not characteristic of the cell, adipose globules make up a very considerable proportion of the secreted product. The granules appear to undergo an active process of growth, after escaping from the interior of the cells, and acquire more unequivocally the form of fat-cells subsequently to their liberation. The microscope conveys no certain information in regard to the future character of these formless granules. Their inherent energy may determine either to the formation of a nucleated cell, a complexly-constructed organismus, or end only in the production of an adipose globule. Ingenious views on this especial subject are announced in an excellent paper in

Müller Archives, by Heinrich Meckel.\* As a general rule, it may be allowed that the tubular system of the liver in the gasteropod mollusca ends in flask-like vesicles, varying more or less in figure and size. In some, as in the snail, the vesicles are elongated into tubular cæca; in others, as in the slug and the oyster, the vesicles are compressed into a figure approaching the spherical. The internal lining membrane seems certainly to possess an epithelial element, in addition to the true glandular cells which occupy the capacity of the dilatation.

In the cephalopod mollusca the liver is remarkable for its great proportional size; a circumstance equally striking in the history of this organ in all classes of the molluscous subkingdom. It is quite apart from the purpose of this paper to enter into accounts which belong more appropriately to elementary works on descriptive anatomy. The biliary organ, it will suffice to remark, is a prominent massive structure divisible into lobes, and lobuli adherent by the medium of delicate cellulosities. Each lobulus is supported, in a peduncular manner, by means of a duct, which serves, also, to unite it to those adjacent. The intimate construction of these acini is not very difficult of determination. In the young loligo†, or calamary, the elementary parts of the gland, from their colourless character and perfect transparency, may be very satisfactorily unravelled. Here the liver is relatively bulky, and projects backwards, in a cylindrical manner, for some distance posterior to the position of the stomach. If immersed in dilute spirit, the homogeneous and apparently structureless mass will display at once, and beautifully, its characteristic constituent lobuli. These lobuli, when delicately taken up and protected against sudden pressure, will present the following constitution.

\* *Mikrographie einiger drüsen apparate der niederen Thiere.* Von Heinrich Meckel. 1846.

† Shoals of which, at this season of the year, visit the bay of Swansea.

Fig. 16.

CEPHALOPODS.



A portion of the liver of the loligo, *a* being the duct common to several racemose lobuli. The terminal vesicles (*b*) are compound, or, in other words, divided by incomplete partitions. These vesicles are lined by minute epithelia, shewn at *d*, which perhaps may be regarded as the cytot blasts of the true hepatic cells displayed at *c*, and enlarged at *e*: they contain a minor series, filled with amorphous granules. Oil globules are abundant in these vesicles. The fat globules are properly contained in the cells. It is not improbable that cells, such as that shewn at *e*, may be parental in relation to the secondary series contained within, and that diversities of size and form may be due to gradations of growth.

The ducts ramify in an arborescent manner, and terminate in oviform cul-de-sacs, of which several are united in the lobuli observed on the surface of the gland with the naked eye. The ultimate extremities of the tubes are arranged on the cryptiform plan; that is, several saccular duplications of the parietes are supported by, and communicate with, one peduncular duct. The internal surface of the lobular vesicles is apparently coated with a granular structure, which closely resembles imperfectly-developed epithelia. The capacious chamber of these united cysts, however, is filled, according to the true glandular principle, by nucleated cells acting their part in the discerning process of the gland. In their intimate organization these cells depart in no respect from the standard which in all cases, with more or less uniformity in invertebrate animals, appears to regulate the structure and character of the hepatic cells. They are voluminous bodies, measuring from  $\frac{1}{200}$  to  $\frac{1}{300}$  inch linear, and charged with molecules, intermixed with adipose par-



ticles of varying development. In the hepatic cells of the loligo instances not unfrequently presented themselves, during the examination, in which it appeared that a generation of secondary cells was proceeding in its development in the interior of a containing and parental involucre. In other examples, as in the compound voluminous hepatic cells of insects, a similar appearance occurred. In the biliary cells of the crustacea an obvious approximation to this principle of structure and multiplication was likewise observed. Although the data yet definitively in the possession of the physiologist are limited as grounds for generalizations, sufficient reason has been shewn for the statement that glandular cells, in numerous instances, multiply and propagate themselves *ab interno*; that is, that the involucre dissolves away, and that the contained germs and molecules expand, by progressive growth, into the succeeding generation of cells. It is however established, by the researches of modern microscopists, that additions also to the mass of secernent cells take place from the cytoblasts generated on the surface of the limitary membrane. In pursuing these investigations on glandular structures beyond the boundaries of the invertebrate kingdom, it may be here not unprofitable to recal, in cursory review, those more prominent and striking points, which the physiologist may interpret in the enactment of his "laws of organization."

In the history of the animal series within the limits of the invertebrate sub-kingdom, no single trait of structure can be confidently enumerated, which, throughout the ceaseless diversities of apparent forms, preserves that unity of type, which precludes doubt as to the identity and homology of the graduating organ. The generality of this statement is not affected by the apparent exception which occurs in the case of the nervous system. The acrite, heteroganglionic, and homoganglionic principles of classifications are not exempt from individual instances in which nonconformity of plan is observed. The cardiac and circulatory apparatus is equally the subject now of undue advances of type, and now of undue retrogressions. This also is found to exist in the remaining constituent systems of the organism. The alimentary canal graduates and re-graduates through fluctuations of plan,

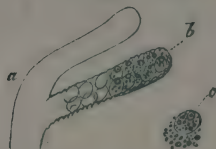
defying the best and most enlarged conceptions of the systematic zoologist. In these indefinite varieties of conformation the biliary organs participate. In reference, however, to some of the last and essential elements of structure, it is susceptible of indisputable proof that their existence is necessary to the very constitution of the gland. A definitely-organized cell, containing a nucleus more or less defined, and amorphous granules more or less abundant, are ultimate and axiomatic facts in the history of glandular structures,

It may be enunciated, also, as a law involving conditions of equal necessity in glandular mechanisms, that a limitary or hyaline membrane is not a contingent, but an essential and necessary element in the simplest as well as in the most complex gland. In the polyps and actinia, groupings of free, naked, granular cells, constitute the total provisions for glandular actions: here the involucre, or cell-wall, is the hyaline element. A follicular folding of the general basement membrane of the mucous structure may now be super-added, as a mechanical apparatus for protecting and containing, in a convenient space, the primordial assemblage of gland-cells. In the former case, a single layer only of hyaline membrane is interposed between the operative internal elements of the gland-cell and the nutritive material in the adjacent blood-vessels. In the latter, two hyaline partitions intervene. In the former, a less energetic selective force may be required to effect the separation of the glandular constituents from the blood; in the latter, a greater. One is marked by the extreme practicable simplicity of arrangement compatible with the competent realization of a purpose: the other is an improved phase—a machine of more complete mechanism, and differing in belonging only to a higher, not a different standard of organization. It is obvious that this definition embraces glands with, as well as those without, excretory ducts; and that these generalized views enable the physiologist to perceive, with confident clearness, that the introduction of an excretory channel can form no real change in the laws of glandular structures, seeing that they only indicate the destination of the secreted product, and point, more or less clearly, to the purposes in the economy for which it is required.

Vertebrate are distinguished from invertebrate animals by greater uniformity and invariableness of structural laws. The osseous, nervous, circulatory, and alimentary systems advance through gradually-developing changes of mechanism in these superior examples of animal life, with few, if any, departures from the scheme of the fundamental type. Like that of the mollusca, the biliary gland of fishes attains a considerable relative magnitude. Unlike the plan of structure which prevails so generally in the inferior and higher classes of molluscous animals, in fishes the hepatic ducts at their terminations present the shape of simple cul-de-sac tubuli, entirely devoid of terminal expansions. The inferior respiration of fishes is probably the physiological condition of the organism which necessitates the compensatory agency of the liver; and this explains its inordinate dimensions. The secretory product of the liver, in all fishes, is poured determinately into the alimentary canal at the pyloric extremity of the stomach. In this situation the pancreatic and hepatic secretions apply their united agency to the completion of the chylific process. It is in fishes, for the first time in the animal series, that indications of a portal system are discovered by the comparative anatomist. In the fish, therefore, as in man, bile is secreted from the united blood of the hepatic artery and vena portæ. These are fundamental points of organic dissimilitude between the hepatic apparatus of invertebrate animals and that of the fish.

Fig. 17.

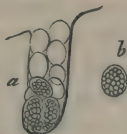
PLAN OF BILIARY TUBES AND CELLS IN THE COMMON SOLE  
(SOLEA VULGARIS).



- a.* Shews two terminal cæcal canals; no terminal dilatation: parietes minutely granular internally, as though lined by epithelia. These tubuli are filled with nucleated granular cells, displayed singly at *c*. These cells measure about  $\frac{1}{2000}$  linear, are very minute, and very readily burst. The adipose particles are very small, and low in their refractive power.



Fig. 18.

BILIARY TUBULUS AND CELLS OF THE FLOUNDER (*PLATESSA FLESUS*).

- a. Compared with the analogous parts in the liver of the sole, they are found to be larger in the flounder. The ultimate granules are very solid, brown, and intransparent.
- b. Shews a perfect primary hepatic cell, filled with granules, and obscuring the nucleus which is always present. The cell membrane is very fine, and difficultly discovered. No fat globules, in any pronounced form, can be discovered in the liver of this and other flat fishes.

It is necessary only to notice one or two individual varieties observed in the ultimate characters of the biliary organ of fishes. The mode in which the limitary membrane is ultimately disposed approaches probably, more or less perfectly, to the tubular cœcum, vesicular expansions being seldom observed. Beginning with the pleuro-nectides, or the flat-fish families, the characteristics of the discerning cells of the liver are remarked to differ strikingly from the form under which it exists in the higher orders. The nucleated glandular cells are minute, and entirely destitute of those conspicuous oil-globules which fill the biliary cell to repletion in all other orders of fishes. The involucre of the cell, also, is so fragile and refined, that an opportunity seldom presents for the inspection of the perfect cell. The cells in these inferior families are densely and compactly arranged in the substance of the liver. In the malacopterygian orders, exemplified by the common cod-fish, the parenchymatous cells of the liver appear under very distinct and enlarged proportions. The contents of the cell is composed almost exclusively of oil-globules, which exist of considerable size and in great number. In no case could a separation of the stearine from the olein constituents of the hepatic cell-oil be discovered, although this fact has been shewn by Mr. Paget to characterize the contents of many other fat cells.\* There is nothing

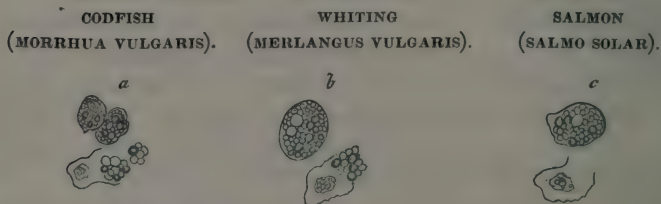
\* Reports on Anatomy and Physiology; and Todd and Bowman's Physiology.

improbable in the supposition that biliary fat is peculiar in chemical composition, as it is remarkable for undergoing preparation in the interior of glandular cells. In the whiting, as in the cod, both of which fishes are said, by Dr. Pareira,† to be fatless, and therefore eligible as tender food for the convalescent and the invalid, the biliary cells are crowded to an extreme degree with adipose globules.

These are likewise the distinguishing marks of the bile-cells in the clupeidæ, a family superior to the former in the scale, as illustrated in the liver of the pilchard and the herring.

The anatomical peculiarities just described are exhibited in the microscopic delineations subjoined.

Fig. 19.



- a. Cells from the liver of the cod-fish,  $\frac{1}{800}$  to  $\frac{1}{1000}$  inch linear. They are gorged with fat-cells; cell-membrane very thin, of low refractive power. No yellow tinge was discernible in individual cells, but in several grouped. The hepatic cells appeared to contain no granular matter; every thing seemed lost in adipose products. A nucleus, however, was present in all cases, but could only be seen in the ruptured cells. In all respects these remarks are applicable to the other instances of hepatic cells depicted; the only difference being in the figure and size of the cells.

Extending the investigations to orders of fishes still more elevated in the scale, such as the salmonidæ, instanced by the salmon and the trout, the biliary cells are found to consist of oval bodies of variable admeasurements, and uniformly filled with fat. Similar characters belong to the biliary elements of those families raised to a still higher standard, as the pike, among the esocidæ. In the highest order, however, as found in the example of the perch among the acanthopterygii,

† On Diet, by Dr. Pareira.

appearances of a reversion of type seem to occur. In this fish the cells are less charged with fat, and seem reduced and concentrated in size and structure; characters which were formerly shewn to belong to orders—as the pleuronectydæ—far inferior in the series. Excepting the reduction in the proportion of the fat, nothing remarkable is involved in the transition from the class of fishes to the amphibian and reptilian type. The reptilian families, from the lepidosiren to the crocodile, are cold-blooded animals, and offer no obvious disparities of physiological relation of structure, especially in regard to the glandular organs. In these animals, in common with the mollusca and fishes, a supplementary or vicarious duty seems to devolve upon the liver, which entails a great augmentation of volume in the organ. In the common water-newts of this country—*triton cristata*—the ultimate gland cells of the liver affect anatomical characters, which continue, with few aberrations, to the last mammalian link in the series. It should here be remembered, that the biliary organ derives its supply of blood from two copious streams—the hepatic and the portal. In the consideration of the anatomy and chemistry of the hepatic apparatus in reptiles it is important to understand that the organism is maintained by atmospheric, in distinction from aquatic, respiration. Thus, although the reptile may be physiologically entitled a cold-blooded animal, the breathing process is, notwithstanding, higher in amount, more energetic in power, than that of fishes. Some modifications of construction in the ultimate elements of the liver may derive much of their explanation from a correct estimate of their dissimilar external conditions.

Fig. 20.

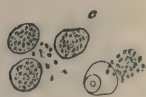
NEWT.



FROG.



SNAKE.



- a.* is a delineation of the parenchymal cell, from the liver of the common newt. (magn. 300. diam.) It is a brownish cell, more or less orbicular, having no obviously discernible nucleus; transparent, from the fact that the contained granules are few in



- number and extremely small ; some few of more prominent size, and may doubtfully be regarded as adipose in character.
- b. shews the same cell in the frog ; less transparent than the former ; granules more abundant ; in other respects the same.
- c. Hepatic of the common snake of our hedges. The cells are remarkably orbicular, and contain very fine granules, in limited number ; they are smaller than those of the frog ; (magn. 300 diam.)

The most marked peculiarity in the anatomy of biliary cells of amphibia and reptiles consists in a reduction of size, in the remarkable and unexpected fact of the nearly complete disappearance of the adipose element—a prominent occupant of these bodies in mollusca and fishes. This reduction in the proportion of the oily constituents of the cell is most unequivocal in the ophidian families. In the salamandrinæ and ranæ the process of inversion in the relative proportion of fat and the true hepatic granules has evidently commenced. The adipose element, it has been conclusively established by these comparative researches, is greatly preponderant in the biliary cell-product in all animals in the invertebrate sub-kingdom ; whilst the bile-granules, distinct from the fat, were found to be correspondently deficient. These proportions, as already shewn, obtain also in fishes. This character, estimated in the abstract, would go far to depress the fish in the scale of organization, and obscure the organic demarcation between its standard and that of the cephalopod mollusc. It certainly may be fairly inferred that the diminution in quantity of fat in the biliary cells of reptiles, as compared with the extraordinary amount which exists in those of the crustacea and the cephalopod mollusca, had immediate reference to the altered circumstances under which the respiratory process is accomplished in these animals. There are, however, many facts contradictory to this rule, which would recognise a direct correlation between the function of the lungs and that of the liver. In insects in which the breathing faculty is inordinately active the biliary cells were found, nevertheless, to be charged with oil-globules. In the case of birds, however, an apparent confirmation is imparted to this generally-accepted law. In these insects of the vertebrate kingdom the contents of the

biliary cells accord with the principle which inculcates a diminished decarbonizing function as regards the part enacted by the liver in these high-breathing animals.

Fig. 21.

FOWL.



PIGEON.



- a.* Hepatic cells of the common fowl; (magn. 300 diam.); nucleus; no adipose globules; granules very minute and scanty.
- b.* Those of the pigeon, smaller: in other respects the same. They are about twice as large as the blood corpuscles generally in birds.

These representations prove a very decided absence of oil-globules in the interior of the true parenchymal cell of the liver in birds. In number, the cells are very abundant, contrasting, in this circumstance, prominently with the cells of the liver in the vertebrate animals. The refractive property of the contained molecules is so low, that the cell appears devoid of the proper biliary hue, and very transparent.

In mammalia, the distinguishing traits of these microscopic components of the liver revert to the type of the fish; that is, the oleaginous particles, although in limited measure, seem again to constitute a normal part of the cell-product. The nuclear sub-organ becomes more declared, and the granular mass of the contents more determinate in quantity and character. The memorable and well-appreciated researches of Kiernan, and, subsequently, the excellent investigations of Müller, Weber, Krause, and Mr. Bowman, have removed almost every remaining obscurity which long perplexed the physiologist in his efforts to unfold and comprehend the mechanism of the ultimate organization of the human liver. There are, however, refined questions of structure still undecided. The anatomical character of the nucleated cell is well ascertained; but its disposition in the lobule, relatively to the origin of the biliary tubuli, remains undetermined. The supposition of Mr. Bowman, that the parietal basement membrane of the biliary ducts ceases at a determinate stage in the interior of the lobule, and that the

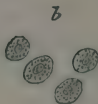
ultimate link in the chain is composed really of free unencapsulated parenchymal cells, is manifestly at variance with every proof and law derived from analogy, and, in its physiological pretensions, utterly untenable. In the whole history of glandular organization no well-defined example can be singled out as illustrative of the principle that a massive accumulation of highly-organized cells can exist under the conditions supposed in his theory. The nearest instance is afforded in the case of the hepatic granules of the actinia; but even they are sustained on the folded surface of a membrane which intervenes between them and the nutritious fluid from which they derive the materials of their maintenance and growth. The hyaline, or limitary membrane, which, without exception, bears the intimate and important relation to all glandular secretory cells of being directly and accurately interposed between them and the contiguous blood-vessels, has undoubtedly some elective office to discharge in reference to those constituents of the blood tending towards the cells; and on every analogy and probability, it may be held that, homogeneous and structureless as it admittedly is, it is designed to impress a preparatory change upon the fluid parts of the blood intended for elimination, to exalt or depress the standard of the chemical combination of their elements, and thus to fit them immediately for the agency of the glandular cells. It is thus shewn that the limitary membrane is an integral component, in the simplest as in the most elaborate instance, of glandular mechanism. The least convoluted structure cannot exist without it. There is little essential variety discoverable in the figure and organization of the hepatic parenchymal cells amongst the highest classes of animals.

*Fig. 22.*

SHEEP.

CALF.

HUMAN.



- a.* Hepatic cells of sheep, nucleated and granular, having a few minute oil globules. They measure about  $\frac{1}{1500}$ .



- b. Those of the calf are more minute ; granules extremely point like ; no obvious fat particles ; little affected with the biliary colour.
- c. Those of the human liver are well known. They are dark brown,  $\frac{1}{1000}$  to  $\frac{1}{1200}$  inch linear, contain a large quantity of granular matter and fat globules, and a distinct nucleus.

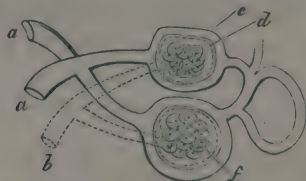
The annexed views exhibit a few of these varieties. The young animal presents no adipose matter in the biliary cells.\* The embryonic cell is characterized, also, by other peculiarities, as respects its intimate structure and secerning faculties, worthy of separate investigation. No question of greater interest can arise at the present time, in relation to the ultimate anatomy of the liver, than that which embraces the mode in which the biliary tubuli take their rise. Investigations, however skilful and laborious, directed solely towards the resolution of the organization of this gland in higher mammiferous animals, are fated to result in "conclusions in which nothing is concluded." The clue of "analogy" is unquestionably the key best fitted to unlock the mysteries of this intricate organ. In fishes, the initial link in the vertebrate chain, it was found that a new and capacious channel, the vena portæ, for the supply of blood was superadded to that of the hepatic artery, exclusively existent in the invertebrate series. Coincidentally with this superadded supply of blood the organ ceases to present the diffluent, loose, and lobulated character which it had hitherto offered, and assumes that of a blood-red, solid, unlobulated mass. These latter features are due to an extreme multiplication of the capillary system ; so much so, that the net-work in a successfully injected liver is observed to be of equal density in whatever direction the section for inspection be made. On this account the blood-vessel system of the liver may be aptly said to be cubic or solid in the disposition of its rete. It then follows, from this demonstrable fact, that there are no other spaces in the liver for

\* As regards the developmental history of the ultimate hepatic cells, I am persuaded that many facts of great interest in physiology will be brought to light by such investigations. I hope, on a subsequent occasion, to be able to make some few additions to our knowledge on the subject of glands and their agency. I may here state, that I have found that the hepatic cells of the embryo contain no fat nor glandular molecules ; that the nucleus is very prominent, and consists of a group of minute cells, the chamber of the cell-capsule being filled with a pellucid fluid, quite hyaline.

the lodgment of the biliary system than those spaces which are created by the capillary net-work of vessels constituting the meshes of the net-work. These are the precise situations in which the glandular parenchymal cells of the organ are found to exist. Now, since it has been demonstrated, by the concurrent researches of many distinguished anatomists, that no areolar or connective tissue exists in the substance of the lobuli, it follows, necessarily, that if no tubular limiting membrane exist as an envelope for the nucleated cells, they must be indiscriminately distributed throughout the substance of the organ, an admission at best flagrantly unphysiological. From the closeness and size of the capillary vessels of the liver, and the existence of a limiting fibrous capsule around the organ, it is clear, that, whatever the form of the terminal portions of the biliary tubes, their mechanical arrangement must be determined by the net-work of the blood-vessels. The interstices of the capillary rete can be readily shewn by the microscope to contain the glandular cells of the organ; and as analogy and observation have conspired indisputably to prove that the interposition of a limiting membrane between the blood-vessel and secreting cell is indispensable, the inference seems irresistible that this essential membrane must exist, and that it must be moulded around, and identified with, the outer coats of the blood-vessels. The subjoined plan, illustrative of these views, will convey a more correct conception.

*Fig. 23.*

PLAN OF ULTIMATE STRUCTURE OF THE HUMAN LIVER.



- a. a.* Vena portæ and hepatic artery uniting to form the capillary system of the liver (*c*).
- b.* Biliary tubulus, shewn by the dotted line, expanding and adhering to the outside of the capillary vessels, thus converting their meshes into receptacles for the true hepatic glandular cells.

The nucleated cells must of course undergo dissolution, preparatory to the excretion, by means of the ducts, of the product of the cell-agency. The fat particles observed in nucleated cells must, immediately before the dehiscence of the cell, enter into new chemical composition with the other products of the cell, and thus finally result in the production of the compound fluid, the bile. Many other questions of surpassing interest, in their relation alike to the physiology and pathology of the hepatic cells, have yet to receive their solution. Nothing has hitherto been done to shew that there prevails any relation of figure or structure between the cells of glands and the blood corpuscles; between the amount of the respiratory process and the adipose elements of the bile; between the structure and agency of the liver and the carnivorous and herbivorous habits of animals: and these questions, in their solution, which is yet to be accomplished, will suggest others of no inferior interest.



CASE  
OF  
SUPPOSED SPONTANEOUS  
PERFORATION OF THE STOMACH,  
TERMINATING SUCCESSFULLY.

BY H. M. HUGHES, M.D.

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ON the evening of February 26, 1846, Mr. Ray, of Dulwich, called on me to request that I would go to the hospital with him to obtain admission for a case of perforation of the stomach, which he had brought in a fly from the village in which he resided. I went with him immediately, and, having arranged that the patient should be carefully conveyed and put into bed in a quiet ward, I visited her, with him, in about half an hour. The history of her complaint is thus related in a note with which Mr. Ray has kindly favoured me.

“SARAH C——, aged 28, called on me about 9½ A.M. of February 26, 1846. She had a chlorotic appearance, and I found upon inquiry that the catamenia were scanty and somewhat irregular; she was also subject to occasional leucorrhœa; the pulse was about 80, and somewhat feeble in character; the tongue was milky, somewhat flabby, and indented at the sides. She complained of uneasiness in the epigastric and left hypochondriac regions; and after taking food suffered so much pain, that she had almost abstained from taking any aliment for the last three or four days. She vomited frequently, and pyrosis was a troublesome symptom. The bowels had been moderately relieved by some pills taken the day before. I prescribed pil. ferri c. gr. x. ter die.

“At 4 P.M. I was sent for, and was informed that, after doing some slight household work, she complained suddenly

of severe pain in the stomach, and appeared to be dying. She was carried up stairs, and I found her extended upon the bed, lying upon her stomach in a state of extreme collapse. Her countenance was expressive of great anxiety; the extremities and the surface of the body generally were cold; and the pulse was scarcely perceptible. She was sensible, but disinclined to answer when spoken to, and complained of constant pain in the epigastrium and right shoulder. The abdomen was not tumid or tender upon pressure, except in the epigastrium. Twenty minims of tincture of opium were given in a little water, and repeated at five o'clock. At six P.M. she expressed herself as somewhat easier; the pulse was more readily felt; the extremities and skin were still cold; she had some retching, but no vomiting; and she had passed some urine. A grain of opium was given in the form of a pill, and repeated at half-past seven, at which time she was carefully removed in a fly to Guy's Hospital, where she arrived about half-past eight, somewhat rallied."

In addition to the particulars detailed in the communication of Mr. Ray, I afterwards learned that she was a domestic servant; that she had for some months been troubled with "bilious attacks;" that she had taken nothing into her stomach for four hours before she was seized with the violent pain, and then only a little gruel; that after preparing the family dinner she sat down in a chair, and that it was in the act of getting up that the severe epigastric pains supervened. It may be mentioned, as a remarkable coincidence, that she had a sister who, at the age of twenty, while in the enjoyment of good health, was attacked with violent pain in the stomach, which was followed by death on the next day.

When visited, after she had been carefully put into bed, she presented the following symptoms:—The countenance was sunk and anxious; the face pale; the extremities rather cold; the tongue moist and creamy; the pulse 110, small and feeble; the respirations 34, and rather catching; the abdomen large and tympanitic, but not to any great extent; the pain had greatly diminished; and tenderness on pressure existed only in the epigastrium. She was ordered to take half a grain of opium in the form of a pill directly, and to repeat it every three hours; and, if she wished it, two teaspoonfuls of

toast-water, by measure, every hour, but no other sustenance, either solid or fluid, of any kind whatever. She was also desired to maintain the perfectly supine and recumbent position in bed; and on no account whatever to move, or be moved, excepting under my superintendence. A large linseed-meal poultice was ordered to be kept constantly applied to the whole abdomen,

2d day. She had passed a quiet night; she had less pain, and had no retching or vomiting: the abdomen was now large, more tympanitic, and generally tender upon the very slight palpation which it was thought prudent to employ. She had passed a small quantity of urine, highly charged with lithates; the tongue, pulse, and respiration, were as on the previous evening, but she complained much of thirst. To continue the pill every four hours, and the toast-water and poultice as before.

3d day. The face was flushed, and the skin rather hot. She complained much of thirst, and of pain in the hypogastric region. She had passed no urine for nearly twenty-four hours. There existed considerable tension above the pubes; and in the part of the abdomen about the bladder and its immediate vicinity, as well as in the epigastric region, there existed some hardness and more tenderness than in other regions; but she was now troubled with flatulence, and complained of pain in the abdomen generally, and of the weight of the linseed poultice; and was altogether much more excited than she had previously been. The water was directed to be drawn off by the catheter; the pill was directed to be taken every six hours; five ounces of strong tepid beef-tea, with five minims of tincture of opium, were ordered to be administered as an enema, and to be repeated in the evening; and the poultice was directed to be more thinly spread. She was also allowed to suck one teaspoonful of beef-tea jelly occasionally, instead of taking the toast-water.

4th day. Twelve ounces of highly-coloured urine were withdrawn by the catheter. The hypogastric pain and tension were immediately removed by the operation, and the thirst was speedily assuaged by the injection. She was not now troubled with flatulence, but the abdomen was still very large and tympanitic. Tenderness on pressure now only



existed in the epigastric region, wherein alone was discovered any hardness below the integuments. The expression of countenance was still anxious: the tongue was still moist and creamy. She passed a small quantity of clear urine spontaneously. The enemata were administered without any change of position. She was not hungry or thirsty; but complained of the hardness of her bed, from being so long confined to one position. The catamenia appeared this morning, and continued to flow moderately for two days. Ordered to continue the pills and poultice as before; to have the enemata administered three times in the twenty-four hours; and occasionally to suck a piece of beef-tea jelly as previously directed.

5th day. She was this morning moved in a sheet, without any change of position, to a fresh bed previously prepared for her reception, and placed by the side of that she had occupied. She was much refreshed by the change. She complained of general pain of the abdomen, which was still large and tympanitic; but was quite soft, except in the epigastric region: pulse 100. To continue as before.

6th day. She was quite easy, and made no complaints, and the abdomen was less.

7th day. Countenance more natural. A small fluid evacuation, the first since her attack, was this day passed in bed. All the injections had been retained.

8th day. She complained of temporary griping pain, which was supposed to arise from flatulence. A large loose motion had been passed on the preceding evening. Ordered to have twenty instead of five minims of tincture of opium, with one of her injections, and in other respects to continue as before.

9th day. The griping pain was immediately relieved by the opiate injection. Her aspect had greatly improved: the abdomen was much less distended, was free from tenderness, and quite soft. She now only complained of hunger. Ordered to have two tablespoonfuls of strong mutton broth instead of the beef-tea jelly. In other respects to continue as before.

10th day. She was perfectly easy: pulse 90. Ordered to take the pill only night and morning: moved to a fresh bed with the same precautions as before.

11th day. The bowels were last evening opened three times spontaneously: the injection, with twenty minims of laudanum, was therefore administered as before. She had no motion afterwards, and was this morning quite easy. The abdomen was soft, flaccid, and free from tenderness; the tongue was clean and moist; the pulse 84; and the respirations 28 in a minute. The poultice was now discontinued, and she was allowed to take a little more broth at a time than before.

From this time, to the evening of the 15th day, she had no fresh symptoms, and continued perfectly easy. She was then troubled with pains in her stomach, and on the morning of the 16th her countenance was somewhat anxious, and the face pale. She complained also of pains under the left breast, and was evidently very much alarmed, particularly as the pain passed through to her shoulder, as it had done on her original attack: the pulse numbered 108, and the respirations 48, and were of a catching character. The bowels had not been relieved since the 11th day. She had latterly taken a little more fluid sustenance. Ordered to have an injection with six drachms of castor-oil, and a poultice applied to the painful side; but in other respects to continue as before.

17th day. She had passed a good night. The bowels had acted spontaneously, and a copious fluid evacuation had been passed. The laxative enema was therefore not administered. The countenance was natural, and she felt quite comfortable: pulse 88. To continue as before.

19th day. Felt quite well, and complained only of hunger. She had, till this day, strictly maintained the recumbent and supine position; but was now allowed to be supported in the semi-erect position.

21st day. A little boiled rice had been allowed the day before. This she disliked. She was now allowed to take the yolk of one soft-boiled egg, and also to sit up in bed.

25th day. A full alvine evacuation was passed yesterday and this day.

29th day. Bowels opened spontaneously three or four times in as many days. Allowed to have four ounces of crumb of bread to sop in her broth and tea. To take the pill only at

night, and to discontinue the injections, which had been regularly administered to this time.

32d day. Permitted to sit up in a chair.

35th day. Allowed some bread and butter, and to walk about the ward.

40th day. Bowels rather confined, but she made no complaint. Ordered to have a castor-oil injection, to omit her pill, and to have some fish.

45th day. Catamenia appeared, and continued, in moderate quantity, for three days.

48th day. Allowed to walk in the square of the hospital, and to have a mutton chop.

50th day. She made no complaint. The bowels were relieved daily; she had no pain after eating; the tongue was clean, pale, and moist; the face was pallid; the abdomen soft, flaccid, and free from tenderness; the pulse 88, feeble and irritable. She wished to leave the hospital.

52d day. Discharged at her own request.

The facts connected with this case have been designedly related with as much conciseness as was compatible with a correct statement of its history and progress. It is not improbable that it may be differently regarded by those who saw it, and those who did not see it. Those who did not see this case, but who are conversant with the history of similar cases, and with the almost uniformly fatal results of lesions such as is supposed to have taken place in this instance, may be inclined to believe, from the mere fact of the patient having recovered, that no perforation of the stomach had actually taken place, notwithstanding the similarity of the symptoms with those of such accidents. Those who saw it, on the other hand (although the patient did not die, and demonstrative evidence of the fact cannot therefore be afforded), will, from the exact similarity, and, with the exception of the result, the perfect identity of the circumstances with those existing in perforation of the stomach, continue to believe that such a lesion was here actually present.

To both these parties it has been believed that the particulars of the case would prove interesting: under either view of the case, it has been considered worthy of record.



If perforation really existed, as it is perfectly believed by those who attended it and witnessed its progress, the case is important in a pathological, but more particularly in a therapeutical point of view. If perforation did not exist, the record of the case is almost equally important, by exhibiting the precise manner in which the history and symptoms of that dreadful lesion may be simulated by some other unknown affection.

Long and multiplied experience has abundantly proved that the dogma of Celsus, "*Servari non potest, cui aut jejunum, aut tenuius intestinum, aut ventriculus, aut renes vulnerati sunt,*" is not true. The histories of numerous cases of fæcal abscess also indicate that spontaneous perforations of the bowels are not necessarily mortal. Morbid anatomy has in many instances disclosed the fact, that perforations of the stomach, resulting from ulceration of its coats, may be closed by the adhesion of adjoining organs. The pancreas, the liver, and the colon have fulfilled the office of a plug to the opening in such cases. Dr. Stokes is convinced that he has seen patients recover after perforation of the ileum, occurring in the progress of continued fever; and Dr. Copeland, several years ago, treated, principally by opiates, a case which presented the usual symptoms of perforation of the stomach, which recovered, and in which the remains of an ulcerated opening, filled up by the adhesion of the adjoining organs, were discovered upon examination of the body three years afterwards.

Though some particulars have varied, a very great similarity has, on the whole, existed in the history and symptoms of the cases in which perforation of the stomach has occurred as a consequence of simple ulceration. The subjects have generally been young women, who have usually suffered from more or less severe symptoms of dyspepsia, and especially from pain after taking food; but who have sometimes, though rarely, had no symptoms indicating the presence of any important organic lesion, or even functional disorder, of the digestive organs. They have very often had irregularities of the catamenia. They have, after taking food, or in the act of some muscular exertion, been suddenly seized with violent local pain in the region of the stomach, which has

radiated to the shoulders. At the same time they have been affected with great depression of the nervous power, and even alarming collapse. The abdomen has afterwards become tympanitic; the pain has gradually extended to the entire cavity; little relief has been afforded by the remedies prescribed; and death has followed in a space of time varying from six to seventy hours.

In each of these particulars, excepting the fatal result, the case now related offers an exact counterpart to such cases. The patient was a young woman, a domestic servant, with irregular menstruation; suffered from indigestion, and particularly from pain after eating; was suddenly seized with pain in the stomach, radiating to the shoulder, and accompanied with such alarming collapse that she was supposed to be dying. She rallied a little; great distention of the abdomen, followed by peritonitis, supervened. But she recovered. It has been, therefore, supposed by some, and may be supposed by others who did not see her, that no perforation of the stomach could have taken place. Against the statement, "she is alive," no argument can be advanced, excepting that of the demonstrated possibility of recovery of such cases, in opposition to the assumed impossibility which those words are intended to imply.

It may now be inquired if, in this particular case, there existed any circumstances which, supposing it to have been one of perforated stomach, might have materially contributed to an acknowledgedly very unusual favourable termination. It is believed that, upon consideration, it will be found that there were several. In the first place, the patient had taken nothing into her stomach for four hours at least before the occurrence of the acute attack; and then only some gruel, easily digested and speedily absorbed. It is therefore probable that no food of any kind was present in the stomach, and therefore that none was effused into the peritoneum. In the second place, the medical gentleman who was first called to her, at once suspecting the nature of the lesion, administered only opium in a small quantity of water. No stimulant or aperient medicine was prescribed, as has unfortunately too frequently been the case in similar attacks: none therefore could have escaped into the peritoneum. The

plan of treatment so judiciously commenced by Mr. Ray was implicitly followed in the after treatment. No stimulant or laxative medicine was administered, until it became almost certain that adhesion had taken place. Finally, the patient was an unusually quiet, docile, and manageable person; and for many days implicitly obeyed the particular instructions which were laid down by her medical attendant, and which were fully carried out by the nurse, who watched her with great care and assiduity.

Opium has been administered in large doses, with admirable effect, by Dr. Graves of Dublin, in low forms of peritonitis; and has been successfully prescribed by Dr. Stokes in that which follows perforation of the intestine occurring in the progress of fever. In the case under consideration it was not given so much with the view of curing peritonitis, as of preventing the condition from which the peritonitis in such cases arises. It was administered mainly with the view of preventing effusion into the peritoneum; and of keeping quiet the system in general, and the stomach in particular. The indications which it was considered important more particularly to carry out were as follows:—1st. To keep the stomach almost perfectly empty, so as to prevent the possibility of effusion; 2dly, To administer opium in considerable doses, to prevent sickness and inordinate action, and to subdue arterial or nervous excitement; 3dly, To keep the patient strictly to one position in bed, so as to favour the formation of adhesions, and to prevent their disruption when they had been formed already.

*The entire merit of the initiatory treatment is due to Mr. Ray. Had stimulants and purgatives been at first administered, it is almost certain that no subsequent plan of treatment could have saved the patient.*

Opium, quiet, and starvation, were the three remedies employed. The opium was administered in moderate doses only, as they appeared to have the desired effect; and those doses were diminished as soon as the symptoms appeared to justify the reduction. In the first twenty-four hours the patient took between seven and eight grains of the drug, without any of the ordinary effects of opium upon the brain, the iris, or the tongue, being at any time noticed. This fact



itself appears to indicate that some very severe disturbance existed in the system. After the first twenty-four hours, the patient took only four grains in the day and night, and this quantity was soon reduced to three grains. By the mouth she took no other medicine of any kind. Warned by the unfortunate experience of Dr. Stokes in one of his cases, it was determined to administer no aperient. On the seventh day the bowels acted spontaneously.

For a period of eighteen days the patient was not allowed to move or to be moved, in the slightest degree, from the supine recumbent position. When the bed became hard and uncomfortable she was removed in a sheet, without any alteration of her position, to another already prepared for her. The enemata were administered as she lay upon her back.

For a period of forty-eight hours the only sustenance allowed her was two teaspoonfuls of toast-water, given every hour. Before the expiration of that time she began to complain bitterly of thirst. It was then that an injection of five ounces of strong beef-tea, with a little laudanum, was administered. Her thirst was immediately assuaged, and was never afterwards complained of. The injections were afterwards administered regularly three times a day, for twenty-seven days, and did not return in a single instance. The fifteen ounces of strong beef-tea thus administered in the course of twenty-four hours constituted her principal support for seven days; during which she was only allowed, in addition, occasionally to suck a single teaspoonful of beef-tea jelly; and, for two days after, to take only two tablespoonfuls of strong mutton-broth at any one time. She was not allowed any solid food, even soaked in her broth, till the twentieth day after her attack. On two occasions, in the more advanced progress of the case, a castor-oil injection was ordered, to relieve the bowels; but it was found necessary to administer it only once. On two occasions an increase in the quantity of laudanum given with the injections was prescribed, to restrain a slight tendency to diarrhœa. It had the desired effect.

On the fourth day, and again on the forty-fifth day after her attack, the catamenia appeared, and continued for a few days, without inconvenience.

When discharged upon the fifty-second day, she had, for six days, taken a mutton chop, and digested it without pain or distress.

I cannot, perhaps, better conclude these few observations upon the case, than in the words of an elegant writer \* upon wounds and other injuries of the intestines:—"Abundant examples have shewn, that neither the depth, nor size, nor direction of the wound, nor the division of considerable blood-vessels and nerves, nor the protrusion, even to strangulation, with a wound of this or other viscera, are unsurmountable obstacles to recovery. The unexpected failure of cases favoured by local circumstances has been not less remarkable than the felicitous termination of the least promising. The attempt to form a prognosis on a hypothetical basis is little better than trifling, being subject to continual delusion as to the fact, and exceptions as to principle. In a practical view, a reliance on its infallibility may, in certain cases, damp the hopes, and possibly enfeeble the exertions of the practitioner; and it is therefore mischievous."

\* Mr. Travers in the *Edinburgh Journal of Medical Science*.

CASE OF ULCER IN THE STOMACH,  
LEADING TO PERFORATION AND DEATH IN NINETEEN HOURS.  
BY EDWARD RAY.

WITH AN ACCOUNT OF THE INSPECTION OF THE BODY,  
AND OBSERVATIONS.

BY JOHN HILTON, F.R.S.

ON the 21st of June, 1846, at 5 P.M., I was requested to visit Sarah C——, aged 27. On inquiry, I learnt that, for the last few days, she had not taken her meals, as usual, with her fellow-servants, but had lived principally upon fruit. According to her own account, she had partaken only of cherries on the 20th, and had eaten nothing but gooseberry tart on the 21st. On the morning of the 21st she complained of diarrhœa, with pains in the stomach, which were attributed solely to diet; and she appeared better towards the afternoon. Soon after 4 P.M. of the same day she had a sudden and severe pain in the stomach, and fainted: she was shortly after carried up stairs; brandy and water was administered, but, as she did not improve, I was sent for. I found her lying upon her stomach on the bed, and moaning most piteously; the surface of the body generally was cold, and cold perspiration hung upon the face and forehead; the countenance was exsanguine and expressive of great anxiety; the eyes lustreless; lips pallid, the upper one tightened over the incisor teeth; the heart's action almost inaudible, and the pulse 72, barely perceptible; the scrobiculus cordis was referred to as the seat of pain, which was aggravated by pressure; the abdomen was not tumid, but was somewhat tender to the touch; thirst was urgent; the bowels had been very relaxed during the day. A grain and a half of opium was immediately given, and one grain ordered to be repeated every hour. The abdomen was to be fomented, hot bottles to be applied to the feet, and the mouth to be only occasionally moistened with a few drops of water.

At 7 P.M. the skin was warmer; pulse 84, readily felt; the pain continued; abdomen slightly tumid, and more tender to the touch; eructations were somewhat frequent: she was continually calling for drink; was perfectly sensible.



One grain of opium was ordered with eight grains of sesquicarbonate of soda every two hours, to be taken by placing the powder upon the tongue and washing it down with a teaspoonful of water; a large mustard cataplasm to be applied to the abdomen.

11 P.M. No improvement: the opium with soda were ordered to be continued.

22d. 5 A.M. The pains suddenly ceased during the night; she had been very restless, complaining of severe pain in the left shoulder and arm, as well as in the abdomen. The surface of the body was cold; the abdomen tympanitic; eructations frequent, odour cadaverous; pupils dilated; pulse scarcely perceptible; she was still sensible, but indifferent. —Pulv. Opii gr. fs. statim sumend.

8½ A.M. Cold, pulseless, and almost insensible. She died at 11 A.M.

The body of Sarah C—— was examined, twenty-five hours after death, by Mr. Ray, Mr. Peppercorne, and myself. No evidence of advanced putrefaction was observable, nor did the exterior of the body present any thing remarkable, except a spherical and somewhat tense projection of the abdomen, very resonant on percussion. A small opening was carefully made through the abdominal parietes, in the median line above the umbilicus, and through this opening air escaped in a continuous stream from the peritoneum. The abdominal viscera were then exposed, and in the recesses between them was found a considerable quantity of turbid fluid, containing portions of gooseberries, cherries, and strawberries, in addition to very numerous small shreds of lymph: the largest accumulation of this fluid, with extraneous matter in it, was situated in the right hypochondrium. A few short cellular adhesions existed between the adjacent convolutions of the intestinal canal; and here and there some of the same kind of old adhesions were found joining the abdominal parietes to the intestines and to the stomach. Nearly the whole of the peritoneal surfaces of the different viscera in the abdomen were covered by patches, varying in extent, of fibrine, irregularly distributed, very soft, easily separated from the peritoneum, and obviously the result of recent inflammation.

This recent effusion was very abundant on the anterior surface of the stomach. There were also extensive old cellular adhesions of the stomach to the liver in front of the smaller omentum, some of which contained blood-vessels filled with blood, and were further partially invested with the recent products of inflammation, and had portions of gooseberries and strawberries interspersed amongst them.

The stomach presented a central constriction, known as the hour-glass contraction of the stomach, but not in an extreme degree. A little gentle pressure upon the stomach caused some air and fluid to escape from amongst the old adhesions at the smaller curvature of the stomach, and so discovered to us the abnormal opening from it into the peritoneum, about midway between the œsophageal and pyloric apertures. A long incision was then made through the anterior wall of the stomach near its lower edge, parallel with the larger curvature; and on turning this part upwards the contents of the stomach were seen, composed of cherries, strawberries, and gooseberries, scarcely broken. These were aggregated at the pyloric extremity of the stomach, and completely filled it. The abnormal opening from the stomach at its smaller curvature was also immediately seen, occupied by a piece of a strawberry. The stomach, and that part of the liver adjoining its smaller curvature, were then removed for further examination. The intestines were but little distended. Some portions of the interior of the intestinal canal were examined, especially the upper and lower portions of the small intestines, but no inflammation or ulceration was detected; nor was there any ulcer in the large intestine. The liver was strongly adherent, at its convex aspect, to the diaphragm by old cellular tissue; its surface was pale, almost white, towards the left side, where it had been blanched by the gastric juice; the internal structure was flabby, but did not present any indications of recent inflammation. The kidneys were healthy. The other viscera examined, including the heart and lungs, did not indicate any thing worthy of notice in reference to the symptoms or the cause of death. On the posterior peritoneal surface of the stomach we found some recent lymph, and a few old cellular adhesions to the surrounding structures. The mucous surface of the stomach

was healthy, except at about midway between the œsophagus and pylorus (at which parts the circumference of the stomach was diminished, corresponding to the external hour-glass-like constriction), and towards the smallest curvature, where it presented the rugæ of the mucous membrane radiating towards the pylorus from a small surface, which had all the appearance of a cicatrix of an old ulcer: half an inch below this part was seen a recent ulcer, about the size of a four-penny piece, irregular in outline, its edges unequal in thickness, and highly vascular: it had extended through the mucous membrane, the sub-mucous fibrous structure, as far as the muscular fibre. On looking to the peritoneal surface of the stomach corresponding to the internal position of this ulcer there was no evidence of any recent inflammation. About half an inch above the cicatrix, to which reference has been made, was placed the base of the conical canal, passing upwards and backwards obliquely through the stomach, which had allowed the escape of some of its contents into the peritoneum, and so caused the death of the patient. The length of this canal was about half an inch from its base to its apex: it was a hollow cone, having thick and firm parietes, its base at the mucous, and its apex at the peritoneal surface of the stomach. The base was somewhat oval in outline, measuring half an inch in its longer, and a quarter of an inch in its shorter diameter, with the mucous membrane slightly retracted towards the canal; the apex, or peritoneal aperture, had also an oval, but much smaller circumference, with well-defined sharp but smooth edges.

The patient, whose symptoms and death are here detailed, is the same that has been already referred to and described by Dr. Hughes, in the preceding article, as a case of supposed perforation of the stomach.

When this patient was in the hospital last February, I saw her very frequently with Dr. Hughes, and never hesitated to conclude, from the symptoms she presented, that she was suffering from peritonitis, the sequel to perforation of the stomach; but until positive and direct evidence could be adduced of its having occurred, it might, in the opinion of those who had not the opportunity of seeing the case, still be a matter of uncertainty. Indeed, a recovery from the



effects of a perforating ulcer of the stomach, allowing extravasation of its contents into the peritoneum, is sufficiently rare to justify the expression of doubt; but I think all doubt in this case may be now considered removed by the necroscopic examination of the patient. The inquiries which this case naturally suggests, are—Was there an opening from the stomach into the peritoneum at the time she was admitted into Guy's Hospital in the month of February last? or did her symptoms then depend on an attack of peritonitis, independent of any perforation of the stomach? So much of these questions as could be answered without a necroscopic examination has been offered by Dr. Hughes. The appearance of very recent inflammation in the abdomen, presented at the examination of the body, added to the symptoms manifested immediately preceding her fatal illness, must be deemed conclusive as cause and effect.

All the signs and symptoms usually thought characteristic of perforation of the stomach were present in this last attack; and they resembled, in every essential respect, the symptoms from which she suffered in her previous illness in the month of February, and from which she recovered. The explanation of these symptoms is sufficiently obvious by the presence of air in the peritoneum, the recent peritonitis, associated with the perforation of the stomach, and the escape of some of its contents into the serous membrane.

At the examination of the body there was evidence of two distinct attacks of peritonitis with a long interval—one which was only of a few hours', the other of many weeks', duration. The solid results of the recent attack were soft, friable, easily separable from the subjacent structures. The evidence of the former attack is found in vascular adhesions, and these invested partially by the recent effusion resulting from the last illness. It may be here remarked that there is nothing in the earlier history of this patient which recognises any previous attack of peritonitis, except that which occurred in the month of February; and the condition of the old adhesions is such as is frequently observable three or four months after known attacks of acute inflammation of the thoracic or abdominal serous membranes.

The interior of the stomach presented the evidence of

three separate ulcerations;—of an old injury cured in the form of cicatrix; of a recent and progressing ulcer without any marked symptoms directly associated with it during life; and of a chronic ulcer, the cause of death. The last I have termed a canal, rather than an ulcerated opening, direct through the walls of the stomach, for the purpose of identifying its very oblique course, which may be said to be the anatomical character of an ulcer at the small curvature of the stomach leading to perforation; its walls being much thickened, very solid, indicating the length of time it has existed. Taking now for granted, what I think cannot be doubted, that this patient had a perforation through the stomach into the peritoneum in the month of February last, the question naturally arises, How was the opening closed and her life saved at that time? Two explanations might be offered: one, that the original ulcer and perforation had healed and cicatrized, and is that from which the folds of mucous membrane are seen to radiate in the preparation; the other, that the perforating ulcer, which caused her death, was the same which induced her previous illness; and that the peritoneal opening became closed by the deposition of adhesive matter around it, fixing it to the nearest organ, the liver; and that the occlusion was complete up to the period of the beginning of the recent fatal symptoms, when some of the old adhesions were detached or broken through, from the distension of the stomach by a large quantity of fruit, or possibly by some other mechanical cause, which does not appear, and so allowed the second escape of the contents of the stomach into the peritoneum. This latter is the explanation at which I arrive, because the cicatrix, to which reference has been made, does not extend through the entire thickness of the walls of the stomach, which negatives altogether the idea of perforation at that part; and, further, from the fact that there was seen, at the inspection of the body, a thick layer of old lymph, in part detached from the peritoneum, over the opening, allowing of an escape through it, but which, during its super-position, as regarded the opening, would have as completely prevented any occurrence of the kind. The age of this ulcerated canal was indicated by its thickened parietes: it had not the appearance of

malignant ulceration of the stomach, and, judging from its aspect, the ulcerative process had ceased; but at the same time there was no evidence of any attempt at healing by cicatrization. By analogy, and observation in corresponding injuries implicating muscular fibre, we might expect that cicatrization would not occur. The gap made in muscular fibres by ulceration is, at all times, very difficult to be filled up, and especially so when forming part of an organ like the stomach; for, the continuity of the fibres once destroyed, they separate widely from each other, each portion contracting to its own distinct fixed point, and thus constantly tend to enlarge the hiatus. This successive perforation by ulceration and retraction of the layers of muscular fibres will probably explain the obliquity of the ulcerated canal, on the supposition of their gradual but unequal contraction, as they become divided by the process of ulceration. When an ulcer of the stomach is confined to the mucous membrane and immediately subjacent structure, it does not present this obliquity in its course; nor is the obliquity manifest when the stomach is traversed by an ulcer at a part where the arrangement of the muscular fibre is more simple than at the small curvature. But in such an instance the gap is filled up by the adaptation of some other organ or structure, and not by cicatrizations or contraction. This kind of ulcer, of which I have seen many examples, is not accompanied, so far as I know, by hæmorrhage: it cannot in any way be considered a menstrual ulcer; its walls, thickened by new deposit, completely prevent such an accident. On the other hand I have several times, in fatal cases of hæmatemesis, discovered the source of the blood in a very small active ulcer, which, from its diminutive size, can only be discovered by carefully looking over the stomach, especially towards the cardiac extremity, where the ulcer, accompanied with hæmorrhage, is usually situated; and sometimes even it is requisite to inject the blood-vessels with water before the ulcer can be detected. This process of injection will frequently discover, with certainty, a clear source of hæmorrhage in ulceration of a small blood-vessel, which otherwise would be considered merely an exudation of blood from the general mucous surface, which I believe to be of very rare occur-



rence, even if ever it happens, in fatal hæmorrhages from the stomach. I know of no satisfactory explanation of the cause of the fact which this case exemplifies—the typical character—namely, the position of the ulcer at the small curvature. The ulcer, which occurs in young people without hæmorrhage, not malignant, but ultimately leading to perforation of the peritoneum and death, as the consequence of the effusion into the peritoneum, is almost invariably at this part of the stomach.

This examination suggests some most important indications in reference to the administration of food in similar cases: it points out the fatal indiscretion, notwithstanding the very earnest advice of Dr. Hughes to this patient, of distending the stomach; and counsels the propriety of carefully abstaining from any large quantity of food at one meal, of avoiding every thing not easy of digestion, or likely to produce flatulency, and, further, the careful avoidance, for many months, of any undue pressure upon the abdomen; forasmuch as any one of these circumstances might lead to a disturbance of the adhesions, and death, as happened in this case.



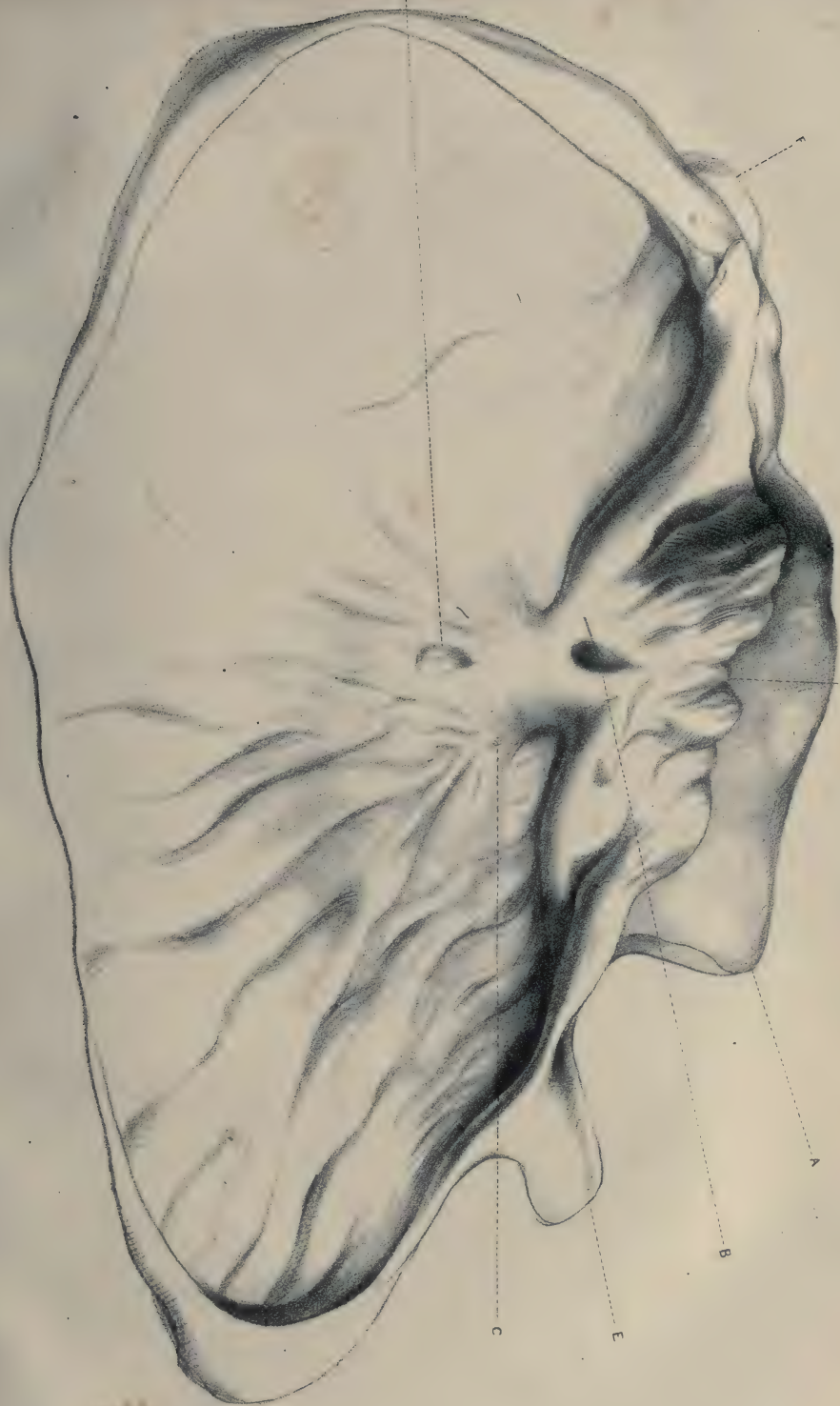
DESCRIPTION OF PLATE.

(See Page 345.)

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- A.* Portion of liver near to the smaller omentum.
- B.* Ulcerated canal through the stomach, at its smaller curvature, through which the extravasation into the peritoneum occurred.
- C.* Cicatrix of an old ulcer confined to the mucous membrane and tissue immediately subjacent.
- D.* A recent and active ulcer.
- E.* Pylorus.
- F.* Œsophagus.
- G.* Anterior part of stomach, raised to shew the perforation of the stomach at *B.*







APPEARANCES  
IN  
THE STOMACH AFTER DEATH.

BY T. WILKINSON KING.

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ANALYSIS.—*Wherever gastric fluid touches, the natural aspect of surfaces declines, decreasingly from left to right, including the adjacent œsophagus and duodenum. Injection, ecchymosis, discoloration, and solution of mucus and tunics, are thus very precisely determined, both in extent and degree.*

THE man of books and ready memory may well felicitate himself on the extent of his attainments, and he may never come to understand that there is mingled with his knowledge a per centage of error, that rigid observation of things alone can expunge. Our simpler vade-mecums are tolerably pure; but larger compilations are very generally faulty in proportion to their size; and faulty in such a measure, as, I dare declare, must vitiate every process and every result of the mind that relies on them. A compilation is a poisoned granary; and such as are anonymous lose in honour and gain still more in prejudice.

John Hunter fully described the digested stomach in man and animals; Dr. Adams enforced the truth. Allan Burns saw at least nine stomachs perforated by gastric juice. Once he found the change in progress, and, closing the body till the next day, he observed the perforation accomplished freely. Drs. Wilson, Philip, and Carswell, are equally clear; yet fifty years have not sufficed to enable systematic writers to excrete a contagious piece of ignorance. The time may have served for some observers to advance a step; and yet it seems probable that open success would be only discredit with their contemporaries.

I have repeatedly endeavoured to shew, from man and animals, that the source of gastric juice is limited, and that



a knowledge of its actions is an indispensable preliminary of pathology, as to œsophagus and stomach; and the same is true as to duodenum. I am not concerned to press what I might add, nor in haste to support what I have stated; but I have thought it well to set down what may aid others in interpreting a few of the less prominent, but most common aspects which gastric juice imparts to the stomach after death.

We may see, in the following order of frequency and severity,

1. At the extreme left end of the stomach a round patch, two or four inches wide, attenuated, bare of mucus, dyed gray or dull red, veins transuding blood, lining softened, &c.

2. To the left of the spine a pool of fluid dissolving the mucus, dying, softening, &c., exactly where it touches.

3. A portion of œsophagus above the cardia; its cuticle softening and separating, in lines, with discolorations, &c., as above.

4. To the right of the spine a separate pool, or a continuous one, with only less-marked appearances than to the left.

5. The same in the acole, or bileless first portion of the duodenum.

6. Air in the stomach often leaves the mark of a water-level most clear; the ridges of the lining are most acted on; and the strong outline of undigested mucus, and unmacerated grainy lining of the air cavity, sulci, &c., may be very evident with little careful washing.

In Dr. Walshe's new translation, M. Louis' account of the stomachs in phthisis is precisely and only my explanation of gastric solutions. I am aware the able translator is by no means responsible.

Pathological descriptions are scattered about, without even a token of distrust, or any sign that digestion may have been a source of error.

A ruptured stomach is described in the *Med.-Chir. Transactions* (Vol. XIV. p. 447), not without softenings.

In the *London Medical Journal*, Vol. IX. p. 382, is a case of suppression of urine and dissolved stomach, said to be inflamed. The mucus was in part gone, and the finger pierced the coats.

A case is recorded, from St. Bartholomew's Hospital, of "Pleuro-pneumonia with softening of the mucous membrane (cuticle?) of the œsophagus" (Lancet Dec. 12, 1832-33) six hours after death.

*"Case of Œsophagitis(?)*

"SARAH D——, aged thirty-five, corpulent, of a sallow complexion, with dark hair and eyes, had been suffering under amenorrhœa for seven months. For this she had taken much medicine, and, among the rest, a large dose of calomel, which had salivated her profusely. According to her own account, she had suffered greatly from excessive salivation for more than two months. On the 9th of June she entered the almshouses. She then complained of considerable difficulty of breathing, of soreness of the gums, of a painful swelling of the left ankle, of loss of appetite, but principally of great difficulty of swallowing. Food would appear to descend as far as the obstruction, but could not pass it, and would be immediately brought up. Some mild drinks she swallowed with less difficulty; but still every act of deglutition gave her pain. This difficulty was greater at one time than another; and she described the apparent obstruction as being at one time nearer her throat, and at another lower down.

"There was no febrile excitement: the skin was cool; the tongue moist and clean; the pulse regular.

"The absence of febrile excitement, the apparent motion of the obstruction, and the amenorrhœa, made me suspect an hysterical affection. Assafoetida was administered without effect; a blister was then laid over the sternum, and a dose of magnesia given. She felt somewhat relieved after this, and said the obstruction had moved further down. She could not swallow, without much difficulty, any mild fluid aliment. She soon after this complained of tenderness of the epigastrium, pain upon pressure, and thirst. This was succeeded by diarrhœa and vomiting, especially upon taking any drinks. She gradually grew worse till the 23d, when she expired.

"AUTOPSY FOUR HOURS AFTER DEATH.—The body presented no emaciation, the cellular substance being everywhere filled with fat. The lungs adhered in many points, and were filled with

dark green spots of different sizes, from that of a pin's head to the size of a hazel nut: the bronchi contained a purulent fluid, which was in the greatest abundance in the large tubes next to the trachea. The heart was of natural size, and covered with a great quantity of fat. The œsophagus contained a fluid having the colour and consistence of pus; the vessels of the mucous membrane were highly injected with blood; and the anterior part of the tube near the arch of the aorta, which was the point where she complained most of the obstruction, was completely disorganized, and, for the length of nearly two inches, could be pressed into a pulp with the fingers. In several places in this part the tube was perforated, and there appeared to be a slight infiltration of the purulent fluid contained in the œsophagus into the cellular membrane surrounding this part. From this point the redness spread through the whole stomach and duodenum, the vessels of both being fully injected with blood; and the mucous coat was so tender in many places, that it could be scraped off in a soft pulpy mass. Below the duodenum the mucous membrane presented its natural colour. The spleen was very much thickened. The uterus was of natural size, but the ovaria were very small, having a shrivelled appearance.

"It appears that the difficulty of deglutition was produced by the irritation of food passing an inflamed portion of the œsophagus, and which caused a sensation exactly similar to that of a tumor pressing upon this part.

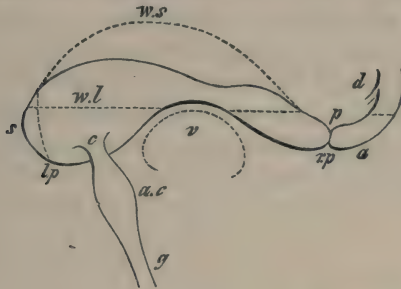
"The disease, it is evident, was, in the first place, œsophagitis, and the inflammation afterwards extended to the stomach, causing the tenderness of the epigastrium. This case shews how great a lesion may exist in some part of the alimentary canal without febrile excitement or pain, except when irritated. It also shews the difficulty of distinguishing between a spasmodic stricture of the œsophagus and an inflammation. And may not those strictures called spasmodic in most cases be owing to this cause, that some portion of this canal is inflamed?"—*American Jour. of Med. Science*, Feb. 1834, p. 567.

Doubtless there are observers who are far better acquainted with what I refer to than our ordinary systematic authors.



The following diagram may be of little value, but it reiterates my meaning briefly, and experience will surely justify the terms intruded.\*

THE STOMACH IN THE RECUMBENT CORPSE.



- |   |  |
|---|--|
| <p><i>a</i> The acole, or bileless space of the duodenum ("pylori-valvular space" &amp;c.</p> <p><i>ac</i> Antecardia.</p> <p><i>c</i> Cardia.</p> <p><i>d</i> Bile-duct.</p> <p><i>g</i> Gullet.</p> | <p><i>lp</i> Left pool.</p> <p><i>rp</i> Right pool.</p> <p><i>p</i> Pylorus.</p> <p><i>s</i> Solvens.</p> <p><i>v</i> Vertebra.</p> <p><i>wl</i> Water-level.</p> <p><i>ws</i> Wind or air space.</p> |
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The imputation of refinement and want of precision may be both due to me. I shall, however, broadly conclude that no change of aspect, no vascularity, ecchymosis, or softening, can be well appreciated without a full experience of more than I have adverted to in the parts in question. I have appended examples taken intentionally within a limited number of days.

July 31, 1846—A man, aged 39, with delirium tremens, great kidneys, granular, and ecchymotic liver, vomicae, obstructed lungs, and adherent heart. Examined 46 hours after death.

The stomach was very large, containing gas, and a full pint of faeculent turbid fluid, smelling very sour. The lining

\* For a common method of exposing the gastric lining I would advise a free cut along the less curve, and, after a little observation, a like cut along the great curve, making two sheets, the cardia attached to one and the pylorus to the other. In ordinary descriptions I use the terms "left and right gaster." No doubt the left end is the thinner, the first to fill and the last to be emptied; the right is most like a gut.

anteriorly (above) was granular, firm, pinkish white, and coated with stoutish mucus.

The left end, all behind, and all within two inches of the pylorus—bounded in front (above) by a sharp clear water-level—was of a deep red. There was blackishness, decreasing from the left end, with an appearance of extravasation of blood, though doubtful, towards the pylorus. These surfaces were whole, devoid of mucus, and had little trace of granulation left. The left end was thinnest and most coloured by transudation. The lining of the acolic duodenum but partially coated with mucus, and all dyed as the right pool of the stomach, indicating morbid turgescence, which digestive softening alone made persistent.

*August 3, 1846*—A female, aged 23, had rapid fungoid tubers of the uterus, lungs, &c., fatal by peritonitis. Examined 20 hours after death.

The stomach presented, at its left end, a well-marked round patch, three inches wide, red, dendritic, and but a little thin and soft, most in the centre. All else was pale. In the œsophagus pulpy masses of separated cuticle.

*August 5*—A male, aged 21, after mild fever, died of a perforating ulcer in the ileum. Examined 36 hours after death.

A left gastric pool, four inches wide, clearly marked off by a fluid level, red with injection, and slightly ecchymotic. In this a centre (to the left), blackish, with softened and eroded lining. Two inches of the right end were similarly marked off, quite abruptly, of a pale greenish colour, scarcely softened. The duodenum affected in the same way, and reddened. All the middle stomach clear, pale, rugous, strongly coated with mucus, grainy and firm, within the above most exact limits; gullet sound.

*August 7*—A female died, aged 25, with one kidney obstructed and suppurating, the other hypertrophic, fat liver, and old bronchitis, &c. My notes only shew that the left gastric pool was plainly defined by its fluid contents.

*August 15*—A female, aged 23, after excesses, mercury, &c., died with a waxy liver of six pounds, large, pale, mottled kidneys, and acute muco-enteritis. Five hours after death a

pool at the back of the stomach, where the lining was dusky and reddened.

*August 17*—A girl, aged 14, very poor, died with nutmeg liver, a large heart, small aorta, tough lungs, &c.

Examined 34 hours after death. There was one wide pool to the stomach (all posteriorly), on which alone the lining was turgid or even ecchymotic.

In conclusion it may be added, that I have not thought it necessary to repeat former statements (*Med. Gazette*, May 1845), nor to refer to able concurrent observers. Gelatinous perforation, &c., in young persons particularly, demand a caution. When the common case, or law, is made clear, the exception becomes plain; not before.



## DIGEST OF ONE HUNDRED CASES

OF

## CHOREA,

TREATED IN THE HOSPITAL.

BY H. M. HUGHES, M.D.

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LITTLE or nothing has, I believe, been added to our knowledge of either the proximate cause, or the exact seat of chorea, since the publication of Dr. Babington's elegant essay on that disease, in the sixth volume of these Reports; I have, therefore, no intention of entering into a discussion of either of these questions. My object, in the following Paper, is to offer a simple digest of one hundred cases of this disease which have, within the last few years, been admitted into the hospital; and to append such observations of a practical character as may appear naturally to arise from such a digest. The records from which the Table has been compiled are unfortunately, in many particulars, imperfect; but I have thought it preferable to take the first hundred cases that presented themselves, of which any notes have been preserved, rather than to make a selection of the cases which have been reported more at length. One hundred cases, then, have been taken without any kind of selection, and, with a single exception, without any exclusion. That exception existed in the case of a man sixty-three years of age, whose disease, although accompanied with irregular spasm, and in the books arranged under the head of chorea, could scarcely, I think, with propriety be so designated, as it was without some of the characters of that complaint, and clearly depended upon chronic disease of the brain of considerable standing.

But though the cases have, to the best of my belief, been in every respect fairly taken—though no selection of any sort or kind has been made—the Table, I am well aware, cannot be, in many particulars, regarded as affording even an approach to a

correct statistical account of the history and progress of chorea. The imperfection arises in some measure from the defective character of the records; but it is dependent more especially upon the mode in which the cases are selected for admission into the hospital. That the Table should afford a really correct view of the disease, it would be necessary that every case that presented itself for admission should be taken in, and that every case that was taken in should be recorded. It usually happens, on the contrary, that the worst cases only are taken into the hospital, and that those of a less severe character are treated as out-patients, or apply elsewhere for relief. Up to a recent period, also, it has generally happened, that, of those cases which have been taken into the hospital, many of the slighter cases have been either not recorded at all, or have not been recorded in a form available for statistical purposes; while of the most severe cases notes have ordinarily been preserved. Hence it arises, that, in the hundred cases of which the Table is composed, three deaths have occurred, while it is probable that scarcely one case of chorea in several hundred cases, as it ordinarily appears, is really fatal.

Of the cases arranged in the Table not more than a quarter have been under my own care: for the particulars of the remainder I am indebted to the records of the Clinical Society, and to the journals of the Clinical Wards.

The few observations that will be appended to the Table will follow its introduction, and will be made upon the separate columns in the order in which they are arranged.

No.	Initials.	Sex.	Age. Yrs.	Duration of complaint be- fore treatment.	Apparent exciting cause.	Interval between the application of cause and the complaint.	Time under treatment.
1	F. S.	F.	12	A few days	Fright	Scarcely any	7 Weeks
2	S. W.	F.	16	12 Months	Ditto, and suppress. menses	Scarcely any	3 Months
3	J. W.	F.	17	2 Months	Ditto, and ditto	Scarcely any	Many months
4	E. H.	F.	14	....	....	....	3 Weeks
5	W. I.	M.	14	4 Months	....	....	8 Weeks
6	W. J.	M.	12	10 Months	None	....	9 Weeks
7	W. S.	M.	13	8 Weeks	None	....	7 Weeks
8	M. H.	F.	11	18 Days	Fright	A few days	5 Weeks
9	I. R.	M.	6	1 Month	....	....	2 Months
10	R. B.	F.	17	7 Weeks	Rheumatism	....	7 Weeks
11	M. R.	F.	10	6 Years	Small-pox	....	6 Weeks
12	F. R.	F.	17	3 Months	Fright, and suppressio menses	Scarcely any	3 Weeks
13	J. L.	F.	14	2 Weeks	....	....	5 Weeks
14	S. M.	F.	14	5 Weeks	Fright	....	8 Weeks
15	E. B.	F.	9	1 Month	....	....	2 Months



Treatment.	Duration of each kind.	Results.	Additional remarks.
Zinci sulphat..... Electricity.....	8 Days 6 Weeks	Cure	
Zinci sulphat..... Nux vomica, iron, valerian, colchicum, &c..... Electricity.....	8 Days 6 Weeks 5 Weeks	Cure	
C. C., purgatives, zinc, iron, &c Zinci sulph. ad gr. xxxvi. t.d. &c. Electricity.....	3 Months Many months 3 Months	No change Cure	Patient went out uncured; re-admitted. Chorea at length cured by electricity. Patient affected with epilepsy.
Electricity.....	3 Weeks	Cure	
Zinc and purgatives..... Electricity.....	5 Weeks 3 Weeks	Cure	Twice before affected with chorea; originally caused by fright.
Zinc and purgatives..... Zinc and electricity.....	1 Month 5 Weeks	Cure	
Purgatives and wine..... Shower-bath, with the same ..	5 Weeks 2 Weeks	Cure	
Purgatives and electricity..... Zinci sulph. and shower-bath ..	4 Days 1 Month	Cure	Formerly had fits, from a blow on the head, and cured of chorea once before.
Zinci sulph. ad gr. xviii. ter die. Ferri carb. ʒi. ter die.....	1 Month 1 Month	Cure	Had chorea once before, and was cured in the hospital in five weeks.
Cannabis indicæ, gr. i. ter die Zinci sulph. ad gr. xii. and preparations of iron.	3 Days 6 Weeks	Cure	Bruit at first audible below the mamma; disappeared under treatment.
Wine & rhubarb, and electricity Zinci sulph. ad gr. xii. ....	10 Days 1 Month	Cure	Patient subject to chorea at intervals since the small-pox six years before.
Zinc, camphor, and conium . . . Quinine, with ditto, ditto . . . Cinchona, æther, ammonia, and musk.	6 Days 10 Days 4 Days	Death	
Purgatives, digitalis, hip and shower-bath. Gentian and iron.....	2 Weeks 3 Weeks	Cure	Had chorea twice before; originally from fright.
Zinci sulph..... Tinct. digitalis, ad m xv..... Liq. arsenical. ad m viii., and shower-bath..... Ferri carb.....	8 Days 6 Days 4 Weeks 2 Weeks	Cure	
Zinc and electricity.....	2 Months	Cure (nearly perfect)	

No.	Initials.	Sex.	Age. Yrs.	Duration of complaint be- fore treatment.	Apparent exciting cause.	Interval between the application of cause and the complaint.	Time under treatment.
16	H. B.	F.	10	3 Years	Fright	1 Week	2 Months
17	M. A. J.	F.	14	2 Months	Rheumatism	None	10 Weeks
18	E. S.	F.	13	3 Months	Fright	1 Week	1 Month
19	M. A. W.	F.	13	7 Weeks	None	....	3 Weeks
20	J. W.	M.	15	2 Months	Fright	2 Days	17 Days
21	J. C.	F.	16	1 Month	Fright	....	12 Days
22	S. B.	F.	6	3 Months	Fright	....	12 Days
23	S. S.	F.	9	3 Weeks	....	....	7 Days
24	G. P.	M.	13	2 Months	....	....	....
25	R. C.	M.	14	2 Weeks	...	....	....
26	J. N.	F.	15	2 Months	...	....	9 Weeks
27	E. H.	F.	12	4 Months	....	....	3 Months
28	M. W.	F.	9	3 Months	Fright	....	2 Months
29	J. T.	F.	28	4 Months	Uterine irritation	....	5 Days
30	H. G.	M.	16	2 Weeks	....	....	14 Days
31	H. G.	M.	10	2 Weeks	....	....	4 Weeks
32	A. H.	F.	12	2 Months	....	....	4 Weeks
33	M. B.	F.	13	2 Weeks	Rheumatism and fright	....	2 Months
34	W. L.	M.	8	....	....	....	6 Weeks
35	E. S.	F.	11	3 Weeks	Fright	....	Seven days
36	E. E.	F.	17	....	Fright	....	6 Weeks

Treatment.	Duration of each kind.	Results.	Additional remarks.
Liq. arsenical. ad m v., and wine	7 Days	Cure	
Iron and electricity.....	1 Month		
Zinci sulph. ad gr. viii. ....	3 Weeks		
Mist. ferri c. ....	2 Weeks	Little improvement	Bellows murmur over the aortic valves and below the mamma.
Zinci sulph. ....	3 Weeks		
Ext. nuc. vomice ....	10 Days		
Ferricarb. and aloëtic purgatives	3 Weeks		
Zinci sulph. ad gr. xvi. ....	4 Weeks	Cure	Patient had three attacks before. Cardiac murmur persistent.
Purgative on alternate nights, Inf. gentian, and soda.....	3 Weeks	Cure	Had chorea once before.
Purgatives, with colchicum, antimony, and opium.....	17 Days	Cure	
Purgatives and iron .....	12 Days	Cure	Had chorea once before. Affection very trifling.
Zinci sulph.....	12 Days	Cure	Affection slight.
Zinci sulph.....	7 Days	Cure	
Leeches and laxatives.....	....	....	
Purgatives.....	....	Cure	
Aperients, mist. ferri c.....	9 Weeks	Cure	
Zinci sulph. ext. conii.....	8 Days	Cure	
Mercurial laxatives.....	3 Days		
Vin. ferri and aloës.....	....		
Purgatives and warm-bath....	3 Weeks	Cure	
Steel and quinine.....	5 Weeks		
Mist. ferri c., galban and coloc.	5 Days	Relief	Patient left spontaneously.
Mercurial laxatives.....	14 Days	Cure	Had three previous attacks; the first eight years, the last one year ago.
Purgatives, and zinci sulph....	4 Weeks	Cure	
Purgatives, and mist. ferri c. ..	4 Weeks	Cure	
Saline aperients, zinc, and wine	1 Month	Cure	After the chorea was nearly cured by zinc, the mist. ferri c. was given to improve her general health.
Mist. ferri c. and wine .....	1 Month		
Purgatives, gentian, and quinine	6 Weeks	Cure	
Liq. arsenical. m iii. ad m x. t. d.	7 Days	Cure	Patient had one attack before, and the complaint soon returned after she left the hospital.
Purgatives and electricity ....	6 Weeks	No change	Had three attacks of chorea before.



No.	Initials.	Sex.	Age. Yrs.	Duration of complaint be- fore treatment.	Apparent exciting cause.	Interval between the application of cause and the complaint.	Time under treatment.
37	H. B.	F.	13	3 Weeks	Fright	....	2 Weeks
38	E. E.	F.	17	3 Months	....	....	4 Weeks
39	E. N.	F.	13	3 Days	Fright	....	5 Weeks
40	P. H.	F.	12	2 Weeks	None	....	7 Weeks
41	J. L.	M.	10	1 Month	....	....	3 Weeks
42	R. C.	F.	18	....	Fright	3 Weeks	6 Weeks
43	M. B.	F.	15	2 Months	Fright	....	3 Weeks
44	A. P.	F.	11	8 Months	....	....	2 Months
45	E. W.	F.	19	2 Weeks	Rheumatism	2 Months	7 Weeks
46	M. A.	F.	22	6 Weeks	Lactation?	....	2 Months
47	E. T.	F.	17	2 Weeks	Fright	....	5 Weeks
48	G. E.	M.	25	6 Weeks	...	....	2 Weeks
49	S. M.	F.	10	8 Weeks	Fright	2 Days	5 Weeks
50	E. A.	F.	8	3 Weeks	Fright	5 Days	6 Weeks
51	A. B.	F.	18	3 Weeks	Fright	1 Day	6 Weeks
52	W. R.	M.	11	2 Days	Blow	None	5 Weeks
53	J. S.	F.	15	1 Month	....	....	7 Weeks
54	M. A. G.	F.	8	1 Month	...	....	2 Weeks
55	M. M.	F.	17	3 Months	....	....	6 Weeks
56	E. F.	F.	11	2 Months	....	....	6 Weeks
57	H. R.	F.	10	1 Year	....	....	2 Weeks
58	M. A. P.	F.	14	6 Months	None	....	9 Weeks
59	S. N.	F.	14	3 Weeks	None	....	3 Weeks

Treatment.	Duration of each kind.	Results.	Additional remarks.
Purgatives.....	2 Weeks	Relief	Patient left spontaneously.
Cupping, steel, and aloës.....	4 Weeks	Cure	
Purgatives.....	9 Days	Cure	Bellows murmur audible below the left nipple.
Zinc and gentian.....	1 Month		
Purgatives.....	12 Days		
Tonics, quinine.....	6 Weeks	Cure	
Alteratives and vegetable tonics	2 Weeks		
Sulphate of zinc.....	1 Week	Cure	
Steel, aloës, and gentian.....	6 Weeks	Cure	
Gentian and iron.....	3 Weeks	Relief	
Sulphate of zinc, ad gr. viii....	8 Weeks	Cure	
Quinine and wine.....	7 Weeks	Cure	
Purgatives, wine, and zinci sulph. ad gr. xxviii. ter die..	8 Weeks	Cure	
Zinci sulph. ad gr. xviii. ter die	5 Weeks	Cure	
Sulphate of quinine and zinc, wine, morphia, opium, &c...	2 Weeks	Death	
Steel and purgatives.....	1 Week	Cure	
Sulphate of zinc.....	4 Weeks		
Zinci sulph. ad gr.xiii.and elect.	6 Weeks	Cure	
Steel, aloës, and purgatives ...	2 Weeks	Cure	
Sulphate of zinc. ad gr. vii....	4 Weeks		
Purgatives.....	3 Weeks	Cure	
Sulphate of zinc.....	2 Weeks		
Gentian and iron.....	1 Week	Cure	
Mist. ferri c. and aloëtic purges.	2 Weeks		
Zinci sulph. ad gr. xvi. ter die..	3 Weeks		
Zinci Sulph.....	2 Weeks	Relief	
Liq. arsenical., inf. cascariillæ..	5 Days	Cure	
Zinci sulph. ad gr. xxi. ter die..	5 Weeks		
Zinci sulph. ad gr. viii. ter die	3 Weeks	Cure	
Wine and rhubarb.....	3 Weeks		
Zinci sulph. ad gr. vii. ter die..	2 Weeks	Cure	
Zinci sulph. ad gr. xii. ter die..	3 Weeks	Cure (nearly perfect)	
Electricity.....	2 Weeks		
Liq. arsenical. ad m vi. ter die	2 Weeks		
Oxydi Zinci, gr. x. ter die....	2 Weeks		
Mist. ferri co., and purgatives..	3 Weeks	Cure	

No.	Initials.	Sex.	Age. Yrs.	Duration of complaint be- fore treatment.	Apparent exciting cause.	Interval between the application of cause and the complaint.	Time under treatment.
60	C. C.	F.	13	2 Weeks	....	....	8 Weeks
61	C. B.	F.	16	17 Days	....	....	6 Weeks
62	M. N.	F.	13	4 Months	Uterine congestion?	....	12 Weeks
63	S. S.	F.	9	2 Weeks	Fright	....	4 Weeks
64	M. M.	F.	8	1 Month	....	....	4 Weeks
65	S. C.	F.	12	2 Months	None	....	4 Weeks
66	S. M.	F.	15	4 Months	....	....	4 Weeks
67	E. H.	F.	11	7 Weeks	....	....	2 Weeks
68	J. S.	F.	10	3 Weeks	....	....	2 Weeks
69	A. H.	F.	13	10 Days	....	....	6 Weeks
70	E. P.	F.	12	3 Months	....	....	5 Weeks
71	C. C.	F.	8	3 Months	....	....	4 Weeks
72	M. E.	F.	9	7 Weeks	....	....	8 Weeks
73	M. C.	F.	9½	6 Weeks	....	....	4 Weeks
74	J. F.	M.	10	2 Weeks	....	....	2 Months
75	F. A.	M.	12	3 Weeks	Fright	None	6 Weeks
76	R. D.	M.	13	4 Months	Fright	4 Days	4 Weeks
77	T. H.	M.	18	6 Months	Rheumatism	None	3 Weeks
78	C. C.	F.	12	4 Months	None	....	4 Weeks
79	M. W.	F.	10	5 Days	Scarlatina and rheumatism	2 Weeks	....
80	F. W.	F.	10	1 Week	Fright	1 Week	4 Weeks
81	G. W.	M.	8	6 Days	....	....	7 Weeks



Treatment.	Duration of each kind.	Results.	Additional remarks.
Purgatives alone and good diet	2 Weeks	Cure	
Zinci sulph. ad gr. viii. ....	6 Weeks		
Iron and purgatives .....	3 Weeks	No change	Patient left the hospital spontaneously.
Zinci sulph. ad gr. xv. ter die..	3 Weeks		
Gentian, iron, and purgatives ..	11 Days	Cure	A very severe and rebellious case.
Zinci sulph. ad ʒi. t. d. & wine	7 Weeks		
Mist. ferri carb. and dec. aloës c.	4 Weeks		
Zinci sulph. ad gr. v. t. d. & wine	3 Weeks	Cure	
Purgatives.....	2 Weeks	Cure	
Wine and rhubarb .....	2 Weeks		
Purgatives, mist. ferri carb....	4 Weeks	Cure	
Zinci sulph. ad gr. iv. ter die..	4 Weeks	Cure	
Purgatives and wine.....	2 Weeks	Cure	
Purgatives.....	2 Weeks	Cure	
Liq. arsenical. ad m x. ter die, ex infus. cascarillæ.....	3 Weeks	No change	Patient left the hospital spontaneously.
Zinci sulph. ad gr. vi. ter die...	3 Weeks		
Zinci sulph.....	5 Weeks	Cure	
Purgatives.....	4 Weeks	Cure	
Zinci sulphat. ad gr. xvi. ter die	8 Weeks	Cure	
Purgatives.....	1 Week	Cure	Had chorea once before.
Oxydi zinci, ad gr. xiv. ter die	3 Weeks		
Electricity nine days, sulphate of zinc seven weeks.....	8 Weeks	Cure (nearly perfect)	Had chorea twice before; originally caused by fright. Mitral murmur occasional.
Ferri sesquioxyd, ad ʒfs. Wine and electricity.	6 Weeks	Cure	
Purgatives and zinc.....	4 Weeks	Cure	Rough sound over the mitral valve.
Antim. opium, and calomel; purgatives and colchicum...	3 Weeks	Relief	
Zinci sulphat. ad gr. vi.....	4 Weeks	Cure	Mitral murmur distinct; disappeared under treatment.
Calomel and hyoscyamus.....	....	Cure	
Sulphate of zinc, ad gr. ii....	3 Weeks	Cure (nearly perfect)	
Purgatives, wine, and quinine..	3 Weeks	Cure	
Sulphate of zinc, ad gr. v. t. d.	4 Weeks		

No.	Initials.	Sex.	Age. Yrs.	Duration of complaint be- fore treatment.	Apparent exciting cause.	Interval between the application of cause and the complaint.	Time under treatment.
82	W. B.	M.	9½	10 Weeks	....	....	12 Weeks
83	E. B.	F.	10	3 Weeks	....	....	5 Weeks
84	M. J.	F.	16	7 Weeks	Mental distress	1 Day	6 Weeks
85	A. H.	F.	14	2 Weeks	....	....	9 Weeks
86	J. R.	M.	5	6 Weeks	Fright	2 Weeks	5 Weeks
87	G. L.	M.	13	3 Weeks	....	....	7 Weeks
88	J. S.	M.	9	3 Weeks	Fright	A few days	2 Weeks
89	E. B.	F.	17	4 Weeks	....	....	5 Weeks
90	M. W.	F.	15	10 Days	Fright	....	4 Weeks
91	M. A. W.	F.	14	6 Weeks	Fright	A short time	4 Weeks
92	M. H.	F.	8	3 Weeks	....	....	4 Weeks
93	E. A.	F.	13	4 Weeks	....	....	2 Weeks
94	W. C.	M.	13	5 Days 8 Years	Injury to the head	....	2 Days
95	G. B.	M.	13	6 Weeks	Fright	3 Days	7 Weeks
96	J. F.	M.	9	5 Weeks	Fright?	....	5 Weeks
97	J. C.	M.	18	8 Weeks	None	....	8 Weeks
98	E. A. C.	F.	15	....	Rheumatism and pericarditis	....	3 Weeks
99	T. B.	M.	18	3 Months	Rheumatism	....	5 Weeks
100	C. B.	F.	11	6 Weeks	Fright	3 weeks	2 Months

Treatment.	Duration of each kind.	Results.	Additional remarks.
Sulphate of zinc, ad gr. viii. . . .	4 Days	Cure	Bruit over the aortic valves, from previous rheumatism.
Potassii iodidi, liq. potass., &c.	7 Weeks		
Liq. arsenical, m iii. ; syr. papav.	5 Weeks		
Sulphate of zinc, ad gr. v. & wine	5 Weeks	Cure	
Steel, aloës, and gentian . . . .	4 Weeks	Cure	
Purgatives and zinci sulph. . . .	2 Weeks		
Steel, aloës, and gentian . . . .	4 Days	Cure	A very severe case.
Ammonia, æther, wine, galvanism, camphor, and zinc, ad gr. xv. . . . .	8 Weeks		
Ferri sesquioxidi gr. x. ter die	2 Weeks		
Zinci sulph. ad gr. v. ter die . . .	3 Weeks	Cure	
Zinci sulph. ad gr. xiii. ter die . .	7 Weeks	Cure	
Zinci sulph. ad gr. viii. ter die . .	2 Weeks	Cure	Patient had chorea once before.
Zinci sulph. ad gr. v. . . . .	10 Days	Cure (nearly perfect)	
Steel, aloës, and shower-bath . .	3 Weeks		
Steel and aloës . . . . .	4 Weeks	Cure	
Zinci sulph. ad gr. v. ter die . . .	4 Weeks	Cure	Had chorea once before.
Zinci sulph. ad gr. x. ter die . . .	4 Weeks	Cure	
Quinine and zinc, ad gr. vi. t. d.	2 Weeks	Cure	
Ammonia, camphor, hyoscyamus, wine, &c. . . . .	2 Days	Death	Had several attacks, from a severe cut of the head in childhood. No particular cause for the present attack.
Zinci sulphat. ad gr. viii. t. d.	4 Weeks	Cure (nearly perfect)	Had one attack before.
Electricity . . . . .	3 Weeks		
Zinci sulph. ad gr. xiii. ter die . .	5 Weeks	Improvement	Had one attack before.
Zinci sulph. ad gr. xvi. ter die . .	7 Weeks	Cure (nearly perfect)	Had a cardiac bellows murmur all the time.
Electricity . . . . .	2 Weeks		
Quinine, ammonia, valerian, and opium. . . . .	3 Weeks	Cure	Heart permanently diseased.
Zinci sulphat. ad gr. x. ter die . .	4 Weeks	Cure	
Quinæ sulph. gr. ii. ter die . . .	8 Weeks	Cure	



*Sex.*—Common observation, and, I believe, all statistical accounts of chorea hitherto published, concur in shewing that females are more liable to the complaint than males. The preceding Table confirms the accuracy of this remark. Thus, of the hundred cases, in seventy-three, or nearly three-fourths, the disease occurred in females; and in only twenty-seven, barely more than one quarter, it existed in males. The cause of this greatly-increased tendency in girls over boys to be affected with the complaint probably arises, in some measure, from their greater susceptibility to external impressions, and especially to one principal exciting cause of the complaint, namely, fright. But it may be considered to be more particularly dependent upon the excitability of the system at large, and the irregular local determinations which, in them, so frequently occur about the period of puberty. Among the causes of this excitability may be particularly mentioned the non-appearance, the suspension, and the irregularity, of the catamenia. Thus, in three cases of females passed the age of puberty, the sudden suppression of the periodic secretion, resulting from fright, is mentioned as the immediately-exciting cause of the complaint. I believe it will be found that females who have passed the age of puberty are rarely affected with chorea, unless they be troubled with some irregularity of the periodical function of the uterus, or unless the complaint be clearly connected with rheumatism, or with disease of the brain or spinal marrow.

*Age.*—Chorea is especially the disease of childhood and of youth. It is comparatively very rare in adult life. Thus it will be found, that, in the hundred cases, there occurred—

At or below the age of 10 . . . . .	33 persons—11 males and 22 females.
More than 10, and not more than	
15 . . . . .	45 . . . . . 11 . . . . . 34 . . . . .
Above 15 . . . . .	22 . . . . . 5 . . . . . 17 . . . . .
	<hr/>
	100                      27                      73

The proportion per cent. of the males affected with the disease was 40·7 for the first period, 40·7 for the second, and 18·5 for the third. And the per centage of the corresponding periods among the females was 30 . . . 46·5, and 23·3. Above 18 years of age the number of males affected was 4, or 14·8 per cent., and of females 4, or 5·47 per cent.

From this comparison it will be seen that support is afforded to the opinion that functional irregularities of the uterus, about the period of puberty, have considerable influence in contributing to the preponderance of the females over the males affected with chorea. It will be observed, that while the number of the males attacked below the age of ten, and between ten and fifteen, is exactly equal, the number of females attacked within the latter term is half as many more than those attacked in the former term; and that, while, among lads, boys and youths are equally liable to the complaint, among girls it is during youth, at the time when they are upon the verge of womanhood, that they are more especially prone to be affected with it. It may be also worthy of notice, that the two youngest patients, aged five and six, were males, although their number is so much smaller than that of the females.

*Duration of the Complaint before admission to the Hospital.*

The complaint had existed not more than 1 week in	7
More than 1 week, and not more than . . . 2 weeks in	14
. . . . . 2 weeks . . . . .	3 . . . . . 14
. . . . . 3 . . . . .	1 month. . . . . 9
. . . . . 1 month . . . . .	3 months . . . . . 37
. . . . . 3 months . . . . .	6 . . . . . 9
. . . . . 6 . . . . .	12 . . . . . 3
. . . . . 1 year . . . . .	2
Duration of complaint not mentioned in . . . . .	5
	<hr/> 100

*Alleged exciting causes.*—In reference to the presumed exciting cause of the complaint the Table is very defective, as

It is not noticed at all in . . . . .	42 cases
It is stated that after inquiry no cause could be ascertained in	9 . .
That it arose from fright in . . . . .	31 . .
. . . . . Ditto, with suppressio mensium in . . . . .	3 . .
. . . . . Rheumatism in 5 . . . . .	} 8 . .
. . . . . Ditto, with Scarlatina in 1 . . . . .	
. . . . . Ditto, with Fright in 1 . . . . .	
. . . . . Ditto, with Pericarditis in 1 . . . . .	
. . . . . Injury to the head in . . . . .	1 . .
. . . . . Mental distress . . . . .	1 . .
. . . . . Uterine congestion in . . . . .	1 . .
. . . . . Uterine irritation in . . . . .	1 . .
. . . . . Small-pox in . . . . .	1 . .
. . . . . Blow on the head in . . . . .	1 . .
. . . . . Lactation in . . . . .	1 . .
	<hr/> 100 . .

Upon the particulars of this Table, excepting "Fright," and "Rheumatism," it is unnecessary to make any remarks; as a single case only being attached to each of the other assumed causes, it may be at least questionable whether they had any relation to the complaint as cause and effect, or, if any, whether the relation should not be regarded rather as a predisposing, than as an exciting cause.

*Fright.*—It appears to be generally acknowledged in the profession, and it is very commonly assumed by parents, that fright is a very frequent exciting cause of chorea. As far as the Table may be trusted—and as regards the particulars enumerated I believe it may be entirely trusted—this very common opinion appears to be correctly founded; as of the forty-eight cases in which any cause was assigned, or reported, simple fright is mentioned as the exciting cause in thirty-one cases, and fright accompanied with other presumed causes is mentioned in four other cases. It is undoubtedly true that the popular opinion may not unfrequently lead to incorrect representations upon the subject, and that fright may sometimes be supposed and represented to be the cause of chorea, when it has really had no connection with it. It has been frequently observed that the first indication of the complaint has not been noticed till several days, or even weeks, after the application of the supposed cause. This circumstance has, occasionally, led to the somewhat hasty conclusion, that it is a mere assumption to regard fright as an exciting cause of chorea at all. When, indeed, the complaint is referred to a fright occurring several months, or, as in one case which I recently read, from eighteen months to two years previously to the first appearance of the disorder, the connection of the two, in that individual case, may be well regarded with suspicion. But when it is recollected that, ordinarily, chorea is curiously progressive in its development; that the first observed indication of its presence is often a little awkwardness of manipulation, or a slight unsteadiness of gait; and that this, in the one case, gradually increases to pricking the fingers while sewing, and breaking the crockery while assisting in other domestic duties, and, in the other, to an ungainly progression, or a dragging of one of the legs, till at length the patient is unable to keep her arms quiet, to walk, or to sit still, or, while awake, to lie in an unguarded bed; it



may, I think, without taking too much for granted, be fairly assumed that the disease had existed before it had been noticed, and that the impression upon the nervous system of the individual was made at the time the fright was experienced; that, in fact, the application of the cause, and the production of the effect, were nearly, or quite simultaneous. But there have been submitted to observation many cases in which the complaint has been noticed almost immediately after the occurrence of the fright. Thus, a child is greatly alarmed by a fire in the night, and the next morning, though previously well, has been affected with chorea. Another has been frightened by meeting a Lascar in the street; another by seeing a drowned woman taken from the water; another by the cry of thieves; another by an unsteadily driven ox; and the disorder has made its appearance the next day; or, if chorea has not been then actually observed, the obvious mental impression, and the excitement thence induced, have not been effaced till the disease has appeared. The complaint may be sometimes cured also by that which originally produced it. A curious instance of this occurred a few years ago. A girl, who had been in the hospital for chorea, and who went out cured, had a return of her complaint. She was going to the hospital to apply for re-admission, but, on her way, was much alarmed as she passed over London Bridge by a person being run over. She, however, pursued her course. On her arrival at the room in which the patients are selected for admission, both she and her mother were much surprised to find that the complaint had left her. She therefore went home again, and had not, so far as I know, any return of the disorder. On the whole, then, it may be asserted, that though perhaps not so frequent a cause as is ordinarily supposed, fright is still a frequent, and probably the most frequent, exciting cause of chorea.

*Rheumatism.*—Next to fright rheumatism may be regarded as among the most common causes of chorea. The connection between the two diseases has been often noticed; and the frequent concurrence of spasmodic affections with pericarditis, which, in the great majority of cases, is of a rheumatic origin, has been particularly illustrated by Dr. Bright, and, more recently, by Dr. George Burrows. It appears at least doubtful whether, in most of such cases, there exists any thing more than

a sympathetic affection of the spinal marrow; seeing that after the removal of the rheumatic affection the chorea is usually curable by the same remedies which are found available in cases of chorea having a different origin. There are, however, some exceptions, in which the membranes of the cord seem to be inflamed and thickened, and in which local depletion, counter irritation, and the continued action of mercury, appear to be the means more especially calculated to remove the complaint, which, in such instances, is often very rebellious.

Among the fifty-eight cases in the Table in which, after inquiry, either no exciting cause could be ascertained, or a particular cause of the complaint is mentioned, eight are enumerated as having their origin more or less directly in rheumatism. This number, amounting to nearly 14 per cent., may be, perhaps, regarded as a fair average. I do not think necessary, in this paper, to relate any ordinary cases of chorea, as they from their frequency would, I conceive, possess little interest; but the two following may, perhaps, be differently regarded. In the first, it will be observed that an attack of acute rheumatism occurred during the progress of chorea; in the second, most violent and distressing chorea supervened upon a case of rheumatic pericarditis, which terminated fatally. It may be right to mention, that, so far at least as regards the attacks, an account of which is given below, neither of these cases occur in the Table, as I did not happen to meet with them in my note book till after the Table was completed. To have included them, therefore, to the exclusion of others, would not have been consistent with the principle of non-selection which I had adopted, and which I have rigidly adhered to throughout. It may also be mentioned, that the latter of these two cases is the same as that marked 8 in the Table of Inspections.

#### CASE I.

##### *Chorea and Rheumatism, with Endocarditis.*

S. M—, aged 15, admitted Jan. 17, 1844. She had been the subject of chorea, more or less, for four months. She had been in the hospital on that account, but left it in the middle of December 1843, comparatively well, though not completely cured. From that time the complaint gradually returned, and had nearly attained its former severity, when, seven days before admission, she was

attacked with articular rheumatism. She had never had any appearance of the catamenia but on one occasion, five months before. She was florid, and rather plethoric, with dark hair and bright black eyes; and, upon admission, was suffering from acute rheumatic swelling of the right knee. Her hands and arms were constantly in motion from chorea, the irregular movements being considerably increased when she was spoken to, or particularly noticed; the tongue was white and loaded; the pulse 90, tense, but not strong. She had considerable pain on pressure in the præcordial region. No unusual dullness on percussion existed therein; but a distinct and loud bellows murmur accompanied the ventricular systole, audible principally, if not solely, below the left mamma. Ordered—

Empl. Lyttæ regioni cordis.

Ant. Pot. Tart. gr.  $\frac{1}{4}$   $\bar{c}$  Opii gr.  $\frac{1}{2}$   $\bar{c}$  Cal. gr. ii. ter die.

Mist. Magnes.  $\bar{c}$  Magnes. Sulphat. et Vin. Colch. m xx. ter die.

For two or three days there appeared to be little alteration, excepting that the rheumatism affected some other joints; but on the 20th, the third day after her admission, she was much worse, and appeared really very ill. The face was much flushed; the skin hot, but moist; the tongue loaded, and brown; and the pulse 120, full, and sharp. The bellows murmur was distinctly audible below the left mamma, though the blister prevented any great degree of pressure of the stethoscope, or even of the ear.

Rep. Pil. et Mist. 4tâ quâque horâ.

Jan. 22d. Neither the mercury nor the colchicum had produced its specific effect: she was neither salivated, nor had there been any large excretion from the kidneys or alimentary canal; yet was she in every respect much better.

Cont. Pil. et Mist. ter die.

30th. All trace of rheumatism had disappeared; she had no febrile excitement; and though the mercury had now been continued for a fortnight there appeared not the slightest evidence of its action upon the gums: the tongue was clean, and, indeed, natural; but the chorea and the bellows murmur continued as before.

Pil. Gentian  $\bar{c}$  Zinco ter die.

Feb. 3d. Two grains of the sulphate of zinc were ordered thrice a day; and the dose was increased to three grains on the 10th, and to four on the 13th. From this time the medicine was not



increased, as the choreal movements began to decrease, and, afterwards continued gradually to do so, till they ceased altogether. The bellows murmur, however, remained for many days in all its former intensity. It at length also began to diminish, both in loudness and in constancy, and was scarcely, if at all, audible on Feb. 30th, when she left the hospital, apparently free from complaint.

#### CASE 2.

##### *Rheumatism, Pericarditis, and Chorea, fatal.*

S. F——, aged 16, admitted into the hospital under my care March 1st, 1843. She had been, only a month previously, discharged from the Clinical Ward of the hospital, where she had been successfully treated for acute rheumatism and pericarditis, accompanied with slight chorea. She soon, however, became ill again; as, on her re-admission, she said she had been unwell for three weeks. She was pallid, and her countenance was expressive of distress: she had habitual dyspnoea, which was increased upon exertion, or decubitus; and pain, aggravated by pressure, in the præcordial region. She had but little cough; the tongue was clean, pale, and moist; the pulse small, frequent, feeble, and irregular; she had no œdema or ascites; and the bowels were open. The præcordial dulness was increased both in degree and extent; the impulse of the heart was feeble, but extensively diffused; the sounds and rhythm, at some parts natural, at others possessed a treble character. She was ordered,

Empl. Cantharid. regioni cordis applicand.

Pil. Hydrarg. gr. iii. Ext. Hyoscyam. gr. ij. ft. pil. quâque nocte sumend.

Potass. Nitrât. gr. v. Liq. Potassæ m x. ex Inf. Gentian. C. ter die sumend.

She continued this medicine, without any material change in her symptoms, and being, on the whole, cheerful and comfortable, till March 18th, when Mr. Gruggen, the ward clerk, observed some increased febrile excitement, accompanied with involuntary motions of the limbs. She was ordered some saline medicine, with ipecacuanha wine, till I saw her in the evening, at 10 o'clock, when I found her labouring under considerable excitement and distress; the face and trunk covered with copious perspiration; the left wrist swollen, red, and tender; the pulse increased in frequency, and the tongue loaded, white, and moist. She had some tenderness in the præcordial region, and a slight but distinct pericardial

rubbing in the upper part of that region. She had no cough, and no delirium; but there existed some involuntary motions of the extremities. Ordered,

Hirudines vi. regioni cordis applicand. et postea Cataplasma Lini.  
Ant. Pot. Tart. gr.  $\frac{1}{4}$   $\bar{c}$  Opii gr.  $\frac{1}{2}$   $\bar{c}$  Hydrarg. Chlorid. gr. i. st.  
et repte nocte manequē.

Cont. Mist.

19th.—The leeches bled freely, and relieved the pain: the swelling of the wrist had disappeared. She was breathing easily, and sitting up in bed without perspiration or chorea.—Pergat.

20th.—She still had little or no pain, and the heart had apparently resumed its former condition of comparative quiet; but the chorea had considerably increased. She had no heat of skin, but was now troubled with cough, attended with a thin frothy mucous expectoration. Ordered,

Empl. Lyttæ.—Pergat.

21st.—The chorea had now so much increased that it was necessary to place boards by her side to prevent her falling out of bed; and it was utterly impracticable to examine her heart and lungs. The bowels were confined. Ordered, a draught containing the carbonate and sulphate of magnesia, with fifteen minims of colchicum wine, thrice a day; and to repeat the pills.

Early the next morning she was seized with greatly-increased dyspnoea, accompanied with great depression, and combined purpleness and pallor of the face. She was immediately ordered ammonia and wine; but she never rallied from the attack, and sank soon after 1 P.M. of that day.

INSPECTION, 24 hours after death.—Nothing abnormal was discovered within the cranium or spine. A small quantity of fluid existed in each pleura, and in the left a little recent lymph was effused. The lungs contained much blood and serum, and, posteriorly, approached red hepatization in consistence and appearance. The pericardium was universally adherent, a very thick layer of solid effusion being deposited between the two portions of the membrane. The layer varied, however, in thickness in different parts. In some it was from a quarter to one-third of an inch, and in others not more than one-sixth of an inch in thickness. It also varied in colour, consistence, and degree of organization. Pale and pink, membranous and gelatiniform, transparent and opaque, at different parts, it appeared to indicate several different attacks of inflammation, while, midway between the attached and reflected portion of

the membrane, there existed a layer of evidently recently-effused lymph. The large amount of solid effusion caused the organ to appear large; but it was evident, upon dissection, that though the cavities were somewhat dilated, their parietes were not thicker, and, in some parts, were even thinner, than natural. Each ventricle contained a firm coagulum. Upon the aortic and mitral valves were some minute vegetations. In the abdomen the organs were generally healthy; but the liver was large, of a nutmeg appearance, and contained some pale interstitial deposit, and the kidneys were hard, and somewhat contracted.

In this case it is, I think, evident that the chorea was directly connected with the pericarditis. Existing during the former attack, it disappeared as long as the patient remained free from any acute affection of the membrane, but returned, with greatly-increased severity, together with the return of the acute pericarditis.

*Interval between the application of the supposed exciting cause, and the appearance of Chorea.*—It has been before observed, that the fright, which has been supposed to have given rise to chorea, has not unfrequently been represented to have occurred many days, or even weeks, before the appearance of the complaint; and that it has, on this account, been sometimes doubted whether the two were, in truth, connected as cause and effect. I was therefore desirous to ascertain, in a considerable number of cases, the duration of the interval that had existed between the application of the supposed cause and the disease; and, if possible, to decide in how large a proportion of cases the interval was so great as to make us hesitate in admitting the connection between the two. My materials are, however, in this respect, very scanty: they are, perhaps, too scanty to allow of any correct deduction being made from them:

No appreciable interval existed in . . . . .	8 cases.
The interval was not more than a week in . . . . .	13 ..
. . . . . more than 1 and not more than 2 weeks in 2 ..	
. . . . . more than 2 weeks in . . . . .	3 ..
. . . . . not noticed in . . . . .	74 ..
	<hr/>
	100 ..

It may be observed, that of the eight cases in which no interval existed between the supposed cause and the appear-



ance of chorea, some depended upon rheumatism, and that, of the remainder, in three cases at least the fright was immediately followed by a suppression of the catamenia, which were present at the time. But of the eighteen remaining cases in which the interval is noticed there are still thirteen in which it amounted to a few days only, or, at most, to one week. Now, when the slowly progressive nature of chorea is duly weighed; when to this is added the exceedingly variable degree of acuteness of the observers; when the "strangeness of manner," the "oddness of behaviour," the awkwardness, and the grimaces, which are so often noticed to precede its more decided indications, and which, though sometimes not so regarded by parents and non-professional observers, are really a part of the disorder, are fairly taken into consideration, sufficient evidence will, I think, exist, that, in a large proportion of cases, fright is a genuine exciting cause of chorea although the interval between the application of that cause, and the ordinary appearance of the disease, may have amounted to several days.

*Duration of the treatment.*—As the advance of chorea is usually progressive, so is, ordinarily, its decline. I recollect but one case (that formerly noticed as cured by fright) in which the complaint was suddenly removed. Even in the most favourable cases the cure rarely requires less than two or three weeks. This will appear from the following Table :

The treatment lasted three weeks or less in . . . . .	* 24 cases.
. . . . . more than 3 and not more than 6 weeks in	40 . .
. . . . . 6 weeks . . . . .	2 months in 23 . .
. . . . . 2 months . . . . .	3 months in 9 . .
. . . . . 3 months in . . . . .	1 . .
Duration of treatment not mentioned in . . . . .	3 . .
	<hr/> 100 . .

*Treatment.*—An attempt was at first made to arrange the particulars of the treatment in a tabular form, distinct from that to be found in the larger Table. It was not successful, in consequence of the variety of remedies to be enumerated, the combinations employed, and the changes made. It was thought, therefore, preferable to arrange the medicines in different classes, and to make some observations upon each class.

\* Of these cases three were fatal.

When any particular medicine or plan of treatment has been discontinued, and another medicine or plan adopted, it has been taken for granted, either that the former one did no good, or that it did not agree. That particular medicine or plan, therefore, is, in the remarks which follow, considered to have failed. I am aware that this conclusion may not have been, in every case, absolutely correct; as, in some cases, the attending physician may have been desirous of trying a particular medicine on other grounds than that of the failure or disagreement of one previously prescribed. In the very great majority of cases, however, the conclusion will be correct.

*Purgatives.*—It may be necessary to premise that, as I believe, in all the cases of uncomplicated chorea, purgative medicines have been administered, either alone, or in combination with other remedies, for the purpose of keeping the bowels open; and that they have been sometimes ordered alone, for two or three days previously to, and in preparation for, a course of mineral or other tonics. The remarks, therefore, which follow, in respect to purgatives, are not applicable to either of these circumstances; but have reference to those cases only in which they were, for a considerable period, either administered alone, or constituted the chief remedy in the treatment.

From my own personal observation I am certainly not disposed to regard the simply purgative as either a desirable, or a successful plan, of treating chorea. I have frequently seen it employed; and I have, on several occasions, tried it myself, in conjunction with good diet, and with or without wine. I have been sometimes, though rarely, satisfied with the result; but, in severe cases, never. In some cases, accompanied with great depression, it appears to be utterly inadmissible. Judging, as correctly as I am able from the facts stated in the histories of the cases, and recorded in the Table, I find that purgatives have been given alone, or in conjunction only with wine and good diet, in fourteen cases; of which they effected a cure in six; appear to have failed in seven; and to have afforded "relief" in one. Made a principal feature of the treatment, but administered, nevertheless, in combination with tonic medicines, purgatives were given in many other cases, and were more efficient in curing the complaint; but it will be at once acknowledged, that such cases cannot be properly regarded as illustra-

tions of the advantages of a simply purgative plan of treatment. There is, however, a combination, which, in a certain class of cases, appears both suitable and efficient, and which, perhaps, ought to be arranged under this head. By whom it was introduced, I do not know. I first became acquainted with it from my colleague, Dr. Babington. It is, simply, a cold infusion of rhubarb in port wine. Upon half a drachm of sliced rhubarb, eight ounces of port wine are infused; it macerates for twelve hours, and of the strained liquid two table spoonfuls, or three, according to the age of the patient, are administered three times a day. It is more particularly suited to the weak and delicate, or the blanched, ill-fed, and ill-clothed children of the poor inhabitants of the metropolis, with whom it agrees admirably, and who take it readily. The effect of this medicine, together with good diet, is often very remarkable; not only upon the disease for which it is prescribed, but also upon the health, strength, and general appearance, of the little patients. It must be, however, acknowledged, that while it improves the general health, it sometimes fails in curing the complaint. Of the hundred cases constituting the Table it was administered only in three cases. Of these, which are not included in the former numbers, it effected a cure in two cases, and failed in one.

*Mineral Tonics.*—Cases of chorea, without doubt, occasionally occur, in which the administration of mineral tonics, in the first instance, would prove inefficient, if they were not altogether inadmissible and injurious. Each case of chorea, like each case of every other disease, should, as a rule, be separately studied, and, though it may be regarded as one of a class, should still be viewed as a distinct individual of the class. In some instances chorea may arise from a loaded condition, and consequent irritation, of the intestinal canal; from worms; and improper aliment. In such cases, purgatives, and attention to diet, will rarely fail to afford relief, if they fail to effect a cure. In other instances, the disorder may be connected with absence, or deficiency of the catamenia, or with other sources of uterine irritation. Under such circumstances, cupping on the loins, the hip-bath, and aloëtic purgatives, or a combination of steel, ammonia, and aloës, either singly, conjointly, or in succession, will be of service. In other cases chorea may be connected



with an inflammatory affection of the pericardium, when the use of antiphlogistic remedies, as cupping, leeches, and blisters, calomel, antimony, and opium, may be absolutely necessary to effect a cure. In others, again, chorea may depend upon an inflammatory thickening of the spinal theca, or upon disease of the brain, when the remedies must be especially directed to those organs. For practical purposes, therefore, the numerical method is not, in strictness, applicable to the remedies employed in the treatment of chorea, any more than it is to those used in the treatment of other diseases. To form the basis of a just comparison of the effects of treatment, the whole of the circumstances connected with two or more cases, or sets of cases, should be precisely similar. This rarely, if ever, occurs. Varieties of age or temperament, of natural constitution or acquired habit, of climate or residence, of occupation or mode of life, will always, more or less, prevent a rigorous comparison, and interfere with the result. Still, as the cases of chorea are comparatively few in which mineral tonics may not, in some part of their course, be advantageously administered, I have thought it might be useful to compare the influence of the different medicines of that class which are ordinarily prescribed for the cure of chorea, so far as that object can be attained by collating the particulars embraced in the Table. The different mineral tonics are very variously estimated by different practitioners, and one is often regarded as especially suited to the cure of chorea. While one regards arsenic as a specific for true chorea, another cures nearly all his cases with the sulphate or the oxide of zinc; and another considers the sulphate or carbonate of iron as an almost infallible remedy. This may perhaps arise, in a great measure, from habit. It is possible that all may be nearly equally efficacious. I have seen each of these, and many other remedies, occasionally cure the complaint; and I have seen them all occasionally fail. I have seen zinc cure after arsenic and iron had failed; and iron cure after zinc had failed. Iron sometimes acts with excellent effect, and with great rapidity, after zinc has been administered for weeks, and in large doses, without any, or scarcely any, impression being made upon the disease. It also frequently acts exceedingly beneficially in improving the general health, and completing the cure, after that has been, in a great measure, effected by the

administration of zinc. One of the cases (No. 62) in the Table was a very striking illustration of the truth of the former assertion, and several among them confirmed the correctness of the latter assertion. The case was briefly as follows:—

“A girl, aged between 13 and 14, who had never menstruated, came into the hospital for rather severe chorea. As she was near puberty her case was thought a suitable one for the use of iron. Extract of gentian and sulphate of iron were accordingly administered, together with purgatives; but as they produced no effect in ten days or a fortnight, the iron was replaced by the sulphate of zinc, which was continued for seven weeks, was gradually increased to a scruple three times a day, and was latterly accompanied with the shower-bath. No progress was, however, made towards a cure. She was certainly no better at the end of this time, but, on the contrary, was perhaps worse than before. The medicine was now changed for the steel mixture and decoction of aloës. The improvement in four days was very remarkable; and in ten days the cure was nearly complete. Concurrently with the disappearance of the chorea, the aspect improved, and the figure rounded in a very striking manner. In a single week she appeared to have changed from a girl into a young woman. She was kept a few weeks longer in the hospital, but while there had no appearance of the catamenia.”

Yet it cannot be considered to be altogether a matter of indifference whether this or that remedy is selected for trial in a particular case. One mineral tonic appears more adapted to cure the complaint in certain individuals than other remedies of the same class. The following statement of the result of the employment of the different metals will, it is hoped, be understood without any comment. It may be right, however, to state, that with each mineral vegetable tonics have been occasionally combined; and that with all of them purgatives have been occasionally administered. In a few cases, also, which are not specified, the shower-bath has been added to the other remedies; and in a few cases, which are specified, electricity has also been employed.

*Arsenic.*—This remedy has been highly lauded; but judging

from my own experience of its efficacy, as well as from the results indicated by the Table, it is certainly not so useful as the other minerals. The form in which it has been administered has, I believe, always been Fowler's solution, in doses varying from two to twenty minims three times a day, either in a simple vehicle or in combination with infusion of cascarilla. When other remedies fail, it may, perhaps, be tried with advantage. I have not prescribed it frequently in cases of chorea. This has arisen from no fear of its injurious operation, as in other diseases I have ordered it very often; and, with the exception of a little bowel irritation and an occasional sharp attack of eczema or lichen, which have shortly disappeared upon the withdrawal of the medicine, I have never known any injurious consequences result from its administration when carefully prescribed and assiduously watched. It was prescribed in only seven cases in the hundred. Of these, it effected a cure in two, and failed to cure, or did not agree, in five cases.

*Iron.*—This remedy is especially adapted to chlorotic females, to girls approaching the age of puberty, or to anæmic children. It has been prescribed in the form of the sulphate with extract of gentian, of the sesquioxide or carbonate, or the compound steel mixture.

It was prescribed in one or other of these forms in 29 cases

Of these, it effected a cure in . . . . .	19	..	or 69 per cent.
it relieved in . . . . .	2	..	
it failed to effect a cure in . . . . .	8	..	or 27 per cent.

In five of the nineteen cases zinc had previously failed; in one, iron was combined with zinc; and in one with electricity.

*Zinc.*—This metal has been more largely administered than any other. In all cases, with the exception of two, which were successfully treated by the oxide, the sulphate has been the form in which it has been prescribed. Beginning with one or two grains three times a day, it has usually been gradually increased by a grain to each dose at each visit twice or thrice a week; or by adding one grain daily to the whole quantity taken in the day. It has been given either in the form of pill or in solution. The dose has been increased up to thirty-six grains three times a day. It has not often caused sickness. The stomachs of some persons, however, appear unable to bear it,



even in small doses ; and in others the organ rebels against its increase after a certain number of grains has been attained. It has in some cases been thought desirable gradually to withdraw the use of the remedy after the cure has been effected, or when it has been nearly complete, though I am not aware of any ill effects having resulted from the neglect of this desirable precaution. It has been supposed that zinc rarely cures chorea until large doses have been gradually attained. I have myself participated in, and acted upon, this opinion. It is right, however, to acknowledge, that, under my own observation, the correctness of this supposition has not been proved experimentally. In the practice of the hospital I am not aware that it has been shewn that small or moderate doses of the mineral, continued an equally long time, will not effect a cure. Some evidence exists to support the contrary opinion. In one of the cases in the Table two grains given three times a day, and continued for three weeks, effected a cure ; and several are reported in which four, five, and six grains only were prescribed, with the desired effect. It may be supposed that the disease in these instances was of a mild character, and I am not prepared to say that it was not so.

Zinc was prescribed in . . . . .	63 cases	
Of these, it effected a cure in . . . . .	45 . .	or 71 per cent.
it relieved in . . . . .	2 . .	
it failed to effect a cure in . . . . .	16 . .	or 25 per cent.

In seven of the forty-five cases iron had previously failed : the zinc was given together with iron in one, and together with the administration of electricity in five cases. In two cases the zinc was given in the form of oxide.

*Vegetable Tonics and Anti-Spasmodics.*—Upon this class of remedies I have very little to communicate. My own experience of their effects has been very little ; and my impression from that little has not been favourable. Quinine, gentian, cascarilla, nux vomica, musk, and Indian hemp, have been administered in one or more cases ; but the whole number of cases in which this class of remedies was tried was only nine. Of these, they effected a cure in three, and failed in six cases.

*Antiphlogistic Remedies.*—In consequence of some inflammatory affection co-existing with, or giving rise to the chorea, anti-

phlogistic measures were adopted in three cases, of which they cured two, and afforded relief in one case.

*Electricity.*—Much has already been written in the Reports of the effects of this remedy in chorea and other spasmodic affections: my observations will, therefore, be brief. The effects of electricity in chorea are sometimes very remarkable. On some occasions I have known it to effect a cure after a great variety of other remedies had for weeks and months been tried in vain. When the body has been wasting, the mind apparently giving way, and the disease proceeding unchecked, if not increasing, notwithstanding a variety of remedies employed assiduously and for a long time, electricity has, under my own observation and direction, effected a really marvellous change. This change has not been more beneficial than it has been rapid. In the course of a week or ten days the entire aspect of the patient has been changed. The motions of the extremities have been reduced to the control of the will; the body has become comparatively robust, and the face plump; the countenance has lost its vacant expression; the disease has, in fact, been cured, and the effects of the disease upon the health and appearance have ceased. When electricity acts beneficially in chorea it produces its effects more rapidly than any other remedy with which I am acquainted; but it is a remedy which is not of universal application in chorea. In some patients it has obviously done harm. In weak, nervous, timid children electricity often increases the disease. The cases in which it appears to be more especially applicable are those occurring in young women, in whom the disease assumes somewhat of an hysterical character, and those protracted cases in boys in whom other remedies have been tried ineffectually, and in whom the disease is dependent upon no obvious source of irritation, and has an injurious effect upon the general health instead of being affected by it.

Electricity is, in the Table, stated to have been employed in only fourteen cases. Several of them were of the most severe form, and of considerable duration. It effected a cure in nine and failed in five. Of the successful cases, it was used in combination with zinc in five, and with iron in one case.

The only other remedy, to which it is considered necessary to

refer, is the shower-bath. I have not the means of ascertaining the number of cases in which it was employed, nor am I able to judge of its influence when employed alone in the treatment of chorea. Conjoined with other remedies, however, I have often seen it prescribed with advantage; but I have also seen it do harm. The observations which have been made as to the employment of electricity are applicable, in a minor degree, to the shower-bath. It is a less powerful remedy than electricity, and produces its effects less speedily; but it has appeared to me to be applicable to the same forms of the disease, and to require the same discrimination in the selection of suitable cases, and the same caution in its application.

*Results.*—Chorea is in general an easily curable disease. It is very rarely fatal. The following Table of Results may be therefore regarded as affording no very favourable evidence of the treatment adopted. This arises from the circumstances to which I have alluded in a former part of this paper. The worst cases of chorea only are, as a rule, taken into the hospital; and of those, which are taken in, many of the slighter cases are not reported; while of the more severe, and especially of the fatal cases, it is almost certain that notes will be preserved.

Of the hundred cases embraced in the table the result was—

Cure in . . . . .	80 cases
Almost perfect cure in . . . . .	7 ..
Relief in . . . . .	6 ..
Little improvement in . . . . .	4 ..
Death in . . . . .	3 ..
Total . . . . .	<hr/> 100 .. <hr/>

Of the patients “cured,” one left the hospital for a time without benefit, but after some months returned, and was ultimately cured.

Of the seven cases “almost perfectly cured,” it may be observed that the cure was so nearly complete that it was either regarded as perfect by the friends, who therefore took the patient out, or that by the attendant physician it was considered certain to become perfect by a temporary continuation of the remedies previously prescribed. With these the patients were probably supplied upon their exit from the hospital.



Of the six cases mentioned as "relieved," it is expressly stated that in two instances the patients left the hospital of their own accord.

Of the four cases to which "little improvement" is attached, in two instances, at least, the hospital was left spontaneously. I believe that all were old chronic cases, connected with either structural changes, with epilepsy, or uterine derangement.

Of the three cases in which death occurred, accounts of two were given in the paper of Dr. Babington previously referred to. The particulars of the third, taken from my own notebook, are as follow:—

### CASE 3.

#### *Chorea—fatal.*

G. E——, aged 25, admitted Feb. 1844. He was tall, rather thin, of dark complexion, and employed at a grocer's in Newington. He was of temperate habits, and had not been affected with any severe illness, but had never enjoyed robust health. About six weeks before his admission, without any assignable cause, moral or physical, he felt a little stiffness, accompanied with twitchings of both hands, but particularly of the left. In a few days the irregular movements extended to the arms. After these had continued, without medical aid, for a month, he applied for advice among my gratuitous morning patients. Purgatives were prescribed, followed by sulphate of zinc; the doses of which were gradually increased, but without any benefit, for about ten days: the disease, on the contrary, became aggravated, and the muscles of the face became affected: the contortions of his features were constant and considerable, and his articulation was impeded. Still the case appeared to me to present nothing more than an ordinary example of chorea, nor to possess any characters which made me in the slightest degree anxious about the result. A few days before his admission his legs became affected, and his progression consequently impeded; and, when brought to the hospital, he was in a lamentable state of jactitation in every part of the body. The mouth, eyes, trunk, and limbs, were twisted and turned in every possible direction, without a moment's cessation. His bowels were open; his tongue clean; he had no pain; complained of no local tenderness; had no paralysis; and was perfectly sensible. His condition was indeed most distressing and pitiable. His motions and contortions were unceasing and universal; and sometimes so

violent as to throw him out of bed. Though boards were placed at the side for his protection, the spasmodic motion was, on one occasion, so violent, as absolutely to cause him to bound over them. After this he got up, jumped over a table, and fell. He was perfectly rational; attempted to put out his tongue when requested to do so; and, though he could not speak, he imploringly asked for relief by his pitiable expressions. He was sensibly hurt, and even shed tears when a bystander observed that he could restrain his motions if he pleased. He was at first ordered sulphate of quinine and sulphate of zinc, in combination with such nutritious diet as he was able to take. He did not sleep at all that night, but was in a state of constant and violent motion during the whole of it. The next day it became evident, that, unless the spasm was suspended, he must sink from simple exhaustion. With the concurrence, therefore, of Dr. Babington, under whose name he was admitted, though placed under my care, I ordered him  $\mathfrak{z}$ vi. of wine, to continue his sulphate of quinine and zinc, and take as much beef-tea as he was able. Notwithstanding this, however, when I saw him in the evening I found him more exhausted; his surface streaming with perspiration; the expression of his countenance anxious; his features shrunk; his pulse more feeble; and the motion of his limbs and trunk equally severe, universal, and incessant. I now felt assured that unless quiet were obtained, and that speedily—unless, in fact, he could be put to sleep—he would not last many hours. He was therefore ordered to take directly half a grain of muriate of morphia; and if sleep or quiet were not induced in four hours at most, to take a grain of opium and a grain of calomel. His spasmodic motions continued with unabated violence all night, during which he was never quiet for a single instant. About 4 A.M., the second opiate having been administered at midnight, he was perfectly still, and was supposed to be asleep for about ten minutes; after which the violent action returned, and he died in half an hour, about forty hours after his admission into the hospital.

INSPECTION, thirty-one hours after death.—Head: a small quantity of blood was spread thinly over the arachnoid, on both sides of the vertex; but it was doubtful if this might not be the result of violence in removing the calvarium. The edge of the fornix, on the right side, was much softened; and the surface of the third ventricle tumid, red, and soft. No other morbid appearance was observed in the brain. Spine: the rachidean fluid was opaque,

yellow, and largely coagulable by heat; and the medulla, upon section, was thought to be softer than natural. Chest: evidence existed of slight pleuritis and pneumonia. The blood was thick, dark, and fluid. Patches of ecchymosis existed below the attached pericardium and the endocardium. The lining of the aorta was dyed by the fluid blood, and its root sprinkled with atheroma. Its valves were thick; on one of them were a few granules of opaque deposit; the other two "ran into one," but whether congenitally, or from previous disease, could not be decided. In the abdomen nothing remarkable existed, excepting red lines, indicative, it was supposed, of slight recent peritonitis.

This case appeared to me to be, in every respect, a genuine case of chorea, differing in no particular, except the fatal result from very many others which I had previously witnessed. Until, indeed, he was admitted into the hospital, I had no doubt of his being cured with the same facility, and by the same means, as those with which many others had been cured. It was, or seemed to be, simple, uncomplicated chorea. The account of the inspection, therefore, may be regarded as especially valuable.

I may here introduce a Table which has been constructed by reference to the accounts of all the inspections of persons dying with chorea of which any records have been preserved in the hospital. I say dying *with* chorea, because it is evident, that in some cases, as in that of pericarditis related in this paper, persons die suffering from chorea in whom that affection is scarcely more than an accidental complication of some other acute disease. It is to be regretted that the particulars contained in the Table are so meagre and imperfect. They embrace a period of more than thirty years, and have been recorded by several different persons. The parts particularly noticed may therefore have been selected for observation and comment according to the particular doctrines of the pathology of chorea entertained generally, or by the individual examiner at the time. The materials are too few and too imperfect for the purposes of any general deduction; but, few and imperfect as they are, they may perhaps be considered as affording a more extended view of the morbid anatomy of chorea than has been hitherto presented.



I have only further to remark, that it is stated in the reports that eighteen individuals out of the hundred had been affected with chorea before, and that eight of the eighteen had been so affected on more than one occasion. It may be also observed, that in ten instances something abnormal is reported in connection with the heart; and that in four of these ten the patients had previously suffered from rheumatism. In all these particulars the Table and the reports, from which the materials were collected, are obviously very defective.

## TABULAR NOTICE OF THE MORBID APPEARANCES

No.	Name.	Age.	Sex.	Date.	Duration of Disease.	Head.
1	A. H.	16	F.	July 1815	3 Weeks	Vessels of pia mater distended. Brain vascular.
2	S. B.	Child.	..	1817	5 Weeks	Vessels of pia mater distended. Serous effusion below the arachnoid and into the ventricles. Slight effusion of blood below the right cerebral hemisphere. Brain soft.
3	M. A. L.	15	F.	June 1833	10 Weeks	Arachnoid opaque. Brain dark and soft. Cyst in the pineal gland. A small vesicle anterior to the infundibulum.
4	A. W.	11	F.	Oct. 1834	7 Weeks	Pia mater watery. Cineritious matter red, soft, and partially adherent. Brain soft and vascular. Much fluid in ventricles.
5	E. M.	14	M.	March 1837	....	Arachnoid opaque in parts. Cerebrum vascular. Left thalamus rather soft. No fluid in ventricles.
6	H. G.	11	M.	Jan. 1840	24 Days	Dura mater adherent very firmly to calvarium, and more opaque than natural. Cerebral vessels turgid. Brain firm and healthy.
7	F. R.	17	F.	May 1841	9 Weeks	Skull contracted and conical. Brain healthy.
8	S. F.	16	F.	March 1843	10 Weeks	Nothing abnormal .....
9	G. E.	25	M.	Dec. 1843	6 Weeks	Blood effused into arachnoid. Fornix and edge of third ventricle soft, red, and tumid.
10	M. A. W.	10	F.	March 1844	10 Days	Brain softened .....
11	W. C.	13	M.	Nov. 1840	8 Years	Unfortunately no record of the examination of this case has been preserved.

IN TEN PERSONS AFFLICTED WITH CHOREA.

Spine.	Chest.	Abdomen.
Not examined	Healthy	Intestines congested: other wise healthy.
Not mentioned	Not mentioned	Liver large, and hard. Mesenteric glands enlarged. Uterine system imperfectly developed.
Not examined	Effusion of bloody serum in the pleuræ. Lungs œdematous. Pericardium acutely inflamed with fibrinous effusion. Heart large, and mitral valve thick.	Liver congested. Ovaries loose, flaccid, and fissured with some distended vesicles.
Soft adhesions of the arachnoid membrane. Grey matter dark.	Not mentioned.	Ileum congested. Ovaries turgid.
Not examined	Heart & pericardium healthy. Old adhesions of one pleura.	Nothing remarkable.
Not examined	Pericardium healthy. Heart healthy, excepting small vegetations on the tricuspid valve. Lungs healthy.	Healthy.
Vessels rather large and numerous. Serous surfaces opaque. Old adhesions of the membranes, especially posteriorly.	Fluid, with albuminous flakes, in the pericardium. Heart large; its surface ecchymosed. Mitral valves opaque.	Liver large. Kidneys and mucous membranes generally congested.
Nothing abnormal	Pericardium adherent with thick variable deposit between the layers of membrane. Delicate vegetations on aortic and mitral valves.	Liver large, full, and myristicate. Kidneys hard and contracted.
Medulla slightly softened. Rachidian fluid opaque, yellow, and densely coagulable by heat.	Blood in heart dark and fluid. Ecchymosis of the attached pericardium and the endocardium. Aortic valves thick and soft: one had a few granules on it: the other two ran into one. Root of aorta had some atheromatous deposit.	Liver large, soft, and mottled. Kidneys large, coarse, and turgid. Recent peritonitis.
Not examined	Granules on mitral valve. Heart soft, and loose, filled with firm clots. A little fluid in left pleura.	Liver large and tumid. Kidneys whitish, with some mottling.



CASES AND OBSERVATIONS  
IN  
MEDICAL JURISPRUDENCE.

BY ALFRED S. TAYLOR, F.R.S.

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REPORT OF A TRIAL FOR MURDER.

BY  
POISONING WITH OIL OF VITRIOL.

WITH REMARKS,

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*Case of poisoning by oil of vitriol in an infant aged four months. —Primary symptoms—Daily progress of the case—Secondary effects—Destruction of the lining membrane of the alimentary canal—Death from exhaustion and starvation in twenty-five days.—Post-mortem appearances.—Chemical analysis of the poison, of the matter vomited by the child, and of stains on linen—Evidence given at the trial—Period required for the production of symptoms in poisoning by oil of vitriol—Effects of dilution—Its action on sugar, logwood, and other kinds of organic matter—Misrepresentation of chemical evidence.—Acquittal of the prisoner.—Medico-legal remarks on poisoning by sulphuric acid.*

THE following case presents many points of interest in relation to the medico-legal history of poisoning by the mineral acids. For a full and accurate report of the daily progress of the symptoms, and for the account of the post-mortem appearances, I am indebted to Mr. George Tatham, surgeon of Wandsworth, formerly a pupil in this hospital. It is not often that cases of this description are so carefully watched; and it is certainly unusual that so young a child—the patient being an infant of four months—should have survived the effects of this highly-corrosive poison for the long period of twenty-five days. I have here given Mr. Tatham's report entire, as it appears to me to be an interesting addition to our pathological knowledge

of the action of the mineral acids. It is also highly creditable to that gentleman, that the medico-moral circumstances, upon which so much depends on these occasions, were so accurately recorded.

MR. TATHAM'S REPORT.

I was sent for to Mr. Barker's, a coach-master in Wandsworth, at about half-past seven o'clock on Wednesday, July 1, 1846. Being from home, my partner, Mr. Howell, attended for me, and he saw an infant with such symptoms and appearances as led him to suppose that something containing vitriol had been administered to it. Acting immediately upon this idea, he went home, taking with him the maid-servant (Mary North), who carried back with her a mixture of magnesia  $\mathfrak{z}\mathfrak{i}$ . sodæ carb.  $\mathfrak{z}\mathfrak{ss}$ . aq. distill.  $\mathfrak{z}\mathfrak{x}$ ., which was to be given freely. Upon my return home, about nine o'clock, I went to Mr. Barker's, and going into the back kitchen I found Mrs. Barker, the maid-servant, with the infant (about four months' old) sitting in her lap, a girl of about eleven years of age, and two little boys, younger. The infant had its head lolling on the right shoulder: it was pale, and apparently in a state of collapse. It appeared to have been sick: the lips and tongue were quite white, as well as all the mucous membrane of the mouth, as far as I could see, looking like soaked parchment. There were two or three spots on the tongue, however, where the membrane seemed abraded, leaving a red fiery contrast. The chin had on it a yellow or light-orange coloured eschar, extending from below the right side of the lower lip down nearly to the apex of the chin. The pulse was small and rapid, and the body cold. The first sight of the lips and chin caused me to exclaim—for I had witnessed a case of the kind before—"This child has had vitriol given to it." The mother told me she had no vitriol in the house; the servant adding, at the same time, particularly, "that they had no use for any thing of the kind." The mother went on to say, that she had not long before given the child some aniseed out of a bottle, which she then gave to me, the contents of which I tasted. It was spirituous, and had the flavour of aniseed very strong. The mother expressed a fear that she had given the child an over-dose, although she gave it in water. However, I persisted in my belief, and desired that they would

produce the vitriol, as I was sure there was, or had been, some in the house. It then appeared to strike Mrs. Barker that they had been using vitriol that morning in making some blacking; and she turned to the girl and asked her what she had done with the remainder. The girl's reply was, "that she had put it on the top shelf, where her mistress desired her to put it." I requested it might be brought, and Mrs. Barker went into the adjoining room, returning with a green six-ounce phial containing about two ounces of apparently strong concentrated oil of vitriol. The bottle was labelled, "Vitriol—Poison." The child, who had been vomiting after the first dose of magnesia had been given, now threw up some pure arterial-looking blood into a tin bowl, about a drachm or less, with violent retching, which continued. Some of the matter first vomited was shewn to me in a white pudding-basin, which I took charge of for analysis. This matter was of a glairy grumous nature, almost black, thick, and adhering to the sides of the basin with much tenacity. It is important to state that no vomiting occurred until after the first dose of the magnesia mixture had been given. This was probably about half an hour after the vitriol had been given to the child, and about five minutes after the magnesia mixture had been swallowed. I desired them to continue the magnesia; requested the mother to draw some breast milk into a spoon, and give the child some frequently; and ordered the lips and chin to be constantly pencilled with sweet oil by means of a camel's-hair brush. I saw the child at twelve o'clock P.M., and found that it had passed three stools precisely of the same colour and consistence as the fluid described before as vomited after the magnesia mixture had been given. Reaction appeared to be set up, and the child's countenance had evidently improved. I ordered lime-water, with breast milk, and to continue the magnesia mixture and salad-oil to the chin; and the albumen of egg, either with or without the breast milk, to be constantly smeared over the tongue, roof of the mouth, and gums.

*July 2d.* The child has been very restless throughout the night, and has had six stools, the first much like the three of last evening; the others more fluid, of a green hue, and in parts shewing a healthy bilious tinge. She has passed urine freely, of what colour I could not tell, as the child had worn



a napkin. The pulse was very rapid, but I could not count it from the inquietude of the child. It was, however, not so small.

I prescribed pot. nit. gr. viii. p. trag. c. gr. xxx. tinct. op. m ii. in 3x. aq. distillat. cochl. min. frequenter. In the course of the day the child took a great deal of breast milk with albumen. She had in all four evacuations: they were of a greenish colour, frothy, and evidently contained much of the albumen which had been swallowed. The pulse was quieter, and the child had slept. The tongue and mouth wore much the same aspect.—Contin. remed.

N.B. I have this day placed in Mr. A. S. Taylor's hands for chemical examination—

1. A napkin, supposed to have been used in wiping the child's mouth, and discoloured with the dark matter vomited.
2. A phial, containing part of the matter ejected from a stomach, mixed with magnesia and distilled water, about an ounce.
3. A phial, with two drachms of vitriol, removed from the green six-ounce bottle so labelled, and now in the possession of the police.
4. An eight-ounce bottle containing aniseed essence.
5. A white pudding-basin, having some of the fluid which was first thrown up from the stomach, exactly as it passed from the mouth.

3d. The child passed a very fair night, sleeping at times. The nitre mixture has been given freely, and always with the effect of quieting it. The breast milk, with albumen, has been taken with great avidity, six or eight eggs having been used. Five evacuations, all of the same kind as last described. Urine abundant. The child appears calmer, and takes notice of its parents.—Cont. remed.

Evening.—Two evacuations in the course of the day, very scanty, and of a yellow, bilious colour, with curdy matter. Has slept quietly, and appears free from pain and irritation. The upper gum and interior of the upper lip have parted with a covering of disorganized mucous membrane, leaving a florid surface. The lips also have lost much of that thick covering which has hitherto been adhering to them. The pulse quieter,

and the skin comfortable.—Continue nitre mixture, breast milk and albumen.

4th. A tolerable night, sleeping at times, apparently from the effects of the mixture. The chin looks irritable, and they have difficulty in keeping the child's hands from it. The bowels have acted three times, the stools fluid, of a sort of leaden colour, and with much of the albumen in them. A piece of membrane has separated from the tip of the tongue, leaving a florid surface, like the upper gum. The sides of the tongue have two raised yellow deposits.—Cont. remed. The mother's milk has begun to fail a little, so that cow's milk has been substituted. The mouth being very irritable, I tried the effect of a little thin starch, with a few drops of liq. opii upon the injured surfaces; but found it dry the parts so much, that I returned to the use of the albumen. Bowels acted scantily: the motions were of the same leaden colour, and fluid.

July 5th. Slept at intervals during the night: bowels have acted very frequently, *i. e.* six or seven times, stools all of a frothy green character. The mixture was continued, with a little chalk in addition; and the albumen was still used with milk, and some thin arrow-root water. The mouth much the same in every respect.

Evening.—Bowels have acted only once in the day, and that very slightly. The chin seems very irritable, more so than the mouth. An anodyne in a little breast milk was prescribed; and the oil was applied to the chin.

6th. Quiet night; bowels have acted twice, of a better colour, something approaching to bilious, and of more substance. The chin appears to be throwing off a slough; and other parts, less injured, seem, as it were, peeling. A large piece of membrane has been removed from the roof of the mouth, leaving a surface not quite so florid as the other denuded parts did. The tongue looks just the same, having the yellow eminence still on the sides: the tip, however, begins to look healthy. The albumen, with breast milk, again used, the mother having a full secretion; and the whole mouth ordered to be constantly covered with a weak solution of borax and syrup of poppies. Oil was applied to the chin and lips as before.

Evening.—The child had been remarkably quiet all day : the lips are looking much better ; the slough on the chin is gradually loosening ; and the tongue has got rid of its covering with one of the yellow eminences on the left side ; that on the right side seems looser ; and the child has been attempting to take hold of the nipple, but has not succeeded, apparently in consequence of the pain it produced. The child's bowels have acted twice, and the stools consisted of a dark-green fluid. To continue the borax, oil, &c. : and to have breast-milk only.

7th. The child has slept well, three hours at a time : bowels have acted three times, stools of a green colour, and evidently containing much of the disorganized membrane, similar to that which has been detached from time to time from the mouth, &c. I have examined these with the naked eye, and believe them to be really portions of the membrane. They were ultimately mixed and connected with a sort of green mucous-looking secretion. The child sucks a wash-leather teat, from a bottle containing breast milk, ravenously. Ordered, *sodæ sesq. carb. gr. x. syrup ʒi. aq. anethi ʒij. liq. calcis ʒv. one-third 4tis horis.*

8th. Child has been quiet nearly all night : the slough has fallen from the chin, and *ung. zinci* has been ordered for it. The bowels have acted three times ; one stool containing such a quantity of the membrane as gave the mother the full impression that it was the "internal skin," as she termed it.—Cont. remed.

Evening.—The child has been very restless all day. It has had a constant tenesmus, and has been passing very scanty stools, six or seven times. A starch enema, with anodyne, has been administered, and ordered to be repeated unless relief is obtained. The interior of the lower lip is very irritable, and the child cannot take the leather teat. It has not taken so much nourishment as usual, and seems depressed. The pulse is somewhat weaker. Ordered an anodyne, and some white-wine whey at intervals, and the breast-milk as much as possible, given with a spoon. The chin is much better.

9th. The child retained the injection all night ; went to sleep at eleven, and slept until three ; took the whey and some



breast milk, went to sleep again, and was quite quiet until seven o'clock, when the bowels acted once, the injection coming away with some more bilious-looking but still rather green-coloured matter.—Rep. mist. &c. Albumen was again applied to the mouth.

10th. The child has been quite comfortable all night. Its bowels have acted once, and a healthy evacuation was passed. The only remaining inconvenience is in the lip, which bleeds whenever the child cries, and keeps up the irritation, preventing the nipple being grasped. The tongue and fauces do not look quite restored to their natural appearance, but they seem sound and healed. The child has cut a lower incisor tooth.

11th. There was profuse salivation, which lasted two days; and when this had subsided there appeared on the chest, arms, and abdomen, a peculiar-looking half petechial and half miliary eruption. After this the child gradually continued to lose strength, and the food which it took returned unchanged at longer or shorter intervals.

26. *horâ* 5 P.M. I have been called to the child, which, after lingering twenty-five days, had just expired. Since the last note upon this case, the child has gradually wasted away. It has never been able to take the nipple, and although every nutritious kind of fluid has been tried, it only served to produce sickness. It has been, in fact, dying for a fortnight. The only means of prolonging life have been the injection of milk and macaroni, which have been administered every two hours, and always retained until the two last occasions. The only medicine it has had has been a mild carminative and anodyne, with stimulants at times. The stomach has constantly rejected all nourishment; in fact, every thing returned perfectly unchanged.

POST-MORTEM EXAMINATION, MADE TWENTY-FOUR HOURS AFTER  
DEATH, JULY 27, 1846.

Body extremely emaciated and quite cold. Marks of commencing decomposition on the abdomen. Mucous membrane of the mouth and fauces quite sound, but pale. A recently-healed ulcer on the chin, below the right side of the lip, from the corrosion produced by the action of the acid.

An incision being made from the apex of the chin down to the pubes, the integuments were reflected, the ribs were cut through, and the cavity of the chest opened. The lungs, heart, its vessels, and the pleuræ, were all perfectly healthy.

On opening the abdomen, the rectum was first sought for; and a ligature being applied as near to the sphincter ani as possible, the intestine was severed, and the whole of the abdominal and thoracic viscera, with the larynx, œsophagus, and tongue, were all removed together. There were no marks of peritoneal inflammation to be discovered. The intestines looked paler than natural.

The under surface of the liver was extensively stained by the gall-bladder, which was full of bile. The stomach and duodenum externally appeared sound.

Two ligatures were applied upon the lower termination of the duodenum, which was then separated from the jejunum. The duodenum was slit up: its cavity appeared contracted, and contained but a small quantity of a grumous mucous fluid: the inner membrane was smoother than natural, appearing quite free from villosity. An incision was now carried on through the pylorus, along the lesser curvature of the stomach to the cardiac extremity, and onwards throughout the œsophagus to the pharynx. There were no marks of inflammatory action to be observed on the lining membrane: on the contrary, it seemed paler than usual, that of the stomach presenting an even shiny surface, much like that of the duodenum. The stomach contained about an ounce of thick grumous slimy fluid.

The other intestines were quite sound, and contained merely a small quantity of mucous matter mixed with bile. There was nothing like fæculent matter to be discovered.

All the other viscera were in a normal state.

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REPORT OF ANALYSIS, &c. IN THE CASE OF THE CHILD BARKER.

*Thursday, July 2, 1846*—Received from Mr. Tatham—

1. A phial, supposed to contain sulphuric acid (oil of vitriol).
2. A liquid first vomited by the child, said to have been ejected about half an hour after its seizure.
3. A dark-coloured liquid in a phial, said to be part of No. 2. neutralized by magnesia.

4. A bottle, stated to contain aniseed mixture for infants.
5. A napkin, stained with greenish-yellow and dark-brown stains, damp and torn.

These articles were kept by me from the time of their delivery, under private lock and key, until the analysis of each was completed, July 4.

#### ANALYSIS.

##### 1. *A phial, supposed to contain oil of vitriol.*

This liquid was of a light brown colour, and of oily consistency. In quantity it was equal to about two drachms, or a quarter of an ounce by measure. It charred the cork of the phial, a piece of stick, and other organic substances with which it was placed in contact. It was intensely acid and corrosive: it evolved the fumes of burning sulphur (sulphurous acid) when boiled with metallic copper. When diluted with its bulk of water it became turbid, and the mixture suddenly acquired a very high temperature.

One drachm of it weighed 119 grains, and, compared with water, its specific gravity was equal to nearly 1.85 (81 per cent. of dry acid).

It contained no arsenic, nor any other impurity, except a little sulphate of lead, which is present in all common specimens of sulphuric acid.

These experiments led to the certain conclusion that the contents of the phial consisted of sulphuric acid, or oil of vitriol, in its most concentrated and corrosive form. There is none stronger known to chemists.

##### 2. *Matter vomited by the child.*

This consisted of a tarry or treacly-looking liquid, contained in a white porcelain basin: it possessed no particular odour, was slimy, indicating the presence of mucus, and had an intensely acid re-action. The black colour appeared to be owing to decomposed blood and mucus, and presented the appearance always met with in the matter vomited after *concentrated sulphuric acid* has been swallowed. The total quantity was about two drachms, or nearly two teaspoonfuls. One-third of the tarry liquid was mixed with some distilled water, boiled and filtered. A pale yellow liquid, very acid,



was thereby obtained. A portion of this was first examined for metallic poison, but none was found to be present.

On adding to another portion a salt of barytes and a few drops of nitric acid an abundant white precipitate was obtained, which subsequent decomposition, by cyanide of potassium, shewed to be a compound of barytes and sulphuric acid (oil of vitriol).

Secondly. A measured quantity of the liquid was taken and submitted to a careful analysis, in order to determine the proportion of oil of vitriol present.

The result was that one drachm (teaspoonful) of the liquid yielded a quantity of sulphate of barytes, corresponding to two grains of concentrated sulphuric acid. Therefore the total quantity, by weight, present in the whole of this liquid was four grains, which are equal, by measure, to about two drops of the concentrated oil of vitriol, the analysis of which has already been given under No. 1.\*

It was then considered necessary to determine whether any salts, such as Epsom salts, Glauber's salt, alum, or other medicinal substances, were mixed up with the contents of the stomach. A portion of the tarry contents was incinerated and burnt to ashes in a platina crucible; the residue dissolved in water, filtered, and submitted to various tests. The result was that small traces of sulphate of magnesia alone were found, probably from part of the acid having been neutralized by the antidotal treatment. The quantity of sulphuric acid, however, thus neutralized was exceedingly small.

The whole of these experiments lead to the conclusion that the matter vomited consisted of mucus and blood, charred by the action of a corrosive acid; that that acid was the sulphuric; and that the quantity actually present amounted to about two drops. In addition to these different bodies, there were also present slight traces of sulphate of magnesia, but no trace of metallic or any other poison.

\* One drachm, or one-half of the liquid, gave four grains of sulphate of barytes; and taking the equivalent of sulphate of barytes as 116·7 and that of the monohydrated sulphuric acid at 49, then  $116\cdot7 : 49 :: 4 : 1\cdot8$  grains; and as 60 drops of this acid weighed 119 grains, then  $119 : 60 :: 1\cdot8 : 0\cdot9$ . It will thus be perceived that the quantity was rather less than two drops.

3. *A dark-coloured liquid in a phial, said to be part of No. 2., neutralized by magnesia.*

This liquid was tested by precisely similar processes. It contained no free sulphuric acid: the whole had been completely neutralized by magnesia. The quantity of oil of vitriol would be determined by the scale given under No. 2, according to the proportion of vomited matter which was originally mixed with water. The discolouration was owing to decomposed blood and organic matter.

It may be concluded from this that sulphuric acid was here present, but that it had been artificially neutralized by the addition of magnesia.

4. *A bottle, stated to contain aniseed mixture for infants.*

The liquid was of a light yellow or straw colour; no sediment; smelt strongly of aniseed; quite neutral; not containing any trace of acid; and in quantity measuring four ounces. It had a very pleasant and sweet taste, without any corrosive or irritant properties.

Various tests were applied to it, with the following results: First, that it contained aniseed oil, with a small quantity of spirit: the aniseed was identified by its smell, and the spirit separated by dry carbonate of potash. Secondly, a quantity of sugar: this was determined by evaporation, and by Trommer's test. Thirdly, a large proportion of water; and, Fourthly, slight traces of sulphate of lime.

I have found that sugar, whether white or brown, often contains traces of sulphate of lime, and spring water is well known to contain it. The very small quantity of sulphate of lime contained in the mixture might be referred to an impurity from one or both of these sources.

Other tests proved that this mixture contained no traces of free sulphuric or any other acid. It contained no opium, no metallic or mineral poison. It left, on evaporation, only burnt sugar, and, on incineration, carbon, with traces of sulphate of lime.

It was therefore proved to be what it had been represented to be—a perfectly innocent mixture, free from any poisonous ingredients whatever.

5. *A napkin, stained with greenish-yellow, and dark-brown stains.*

The greenish-yellow stains appeared to be owing to bile : they were like those met with on the napkins of infants. The dark brown stains had exactly the appearance as if they had been produced by the vomited matter, the analysis of which has been given under No. 2. The napkin in and around them was damp to the feel, although it had been exposed some hours in a dry and warm atmosphere. This is a striking character of stains produced on cotton or linen stuff by sulphuric acid. In and about the situation of these stains, the fibre of the napkin was completely corroded. It was torn by the slightest force, and had the appearance of having been acted on by a corrosive liquid. One of the portions damp and stained, equal to about two square inches, was cut out, divided into small pieces, and boiled in a perfectly clean vessel, proved to contain no acid, with about one ounce of distilled water, also proved to be free from acid, for a quarter of an hour. A turbid liquid, strongly acid, was obtained on filtration. On applying the barytic test, a white precipitate, quite insoluble in nitric acid, was procured. This, when heated with cyanide of potassium, gave a sulphuret (sulphuret of barium); and it was thus distinctly proved that sulphuric acid must have been dissolved by the water out of the piece of napkin used. A quantity equal to a quarter of a grain (or one-eighth of a drop) was obtained from a small portion of the napkin.\*

On heating a damp portion of the napkin it became charred; another character of stains produced by sulphuric acid on articles of linen or cotton.

Another portion of the napkin, less stained, was cut out; but this, on being treated in the same way, yielded distinct evidence of the presence of sulphuric acid.

Search was then made for a portion neither damp nor stained. This was found near the border of the napkin. It was cut to pieces, boiled in distilled water, and filtered; in short, it was treated exactly like the stained portion. The

\* The quantity of sulphate of barytes procured from two square inches amounted to 0·6 grain. Therefore  $116\cdot7 : 49 :: 0\cdot6 : 0\cdot25$  grain of oil of vitriol, or about 0·125 of a drop.



water, on filtration, was not acid, nor could any traces of sulphuric acid, either in the free or combined state, be found in it.\*

As a recapitulation of the results of the analysis, I would here draw the following conclusions :

1. That the liquid in the phial, No. 1, was pure and concentrated oil of vitriol.

2. That the vomited matter contained oil of vitriol, *which must have been evidently taken in a concentrated form, from the dark and carbonized appearance of the matter ejected.† It is only concentrated vitriol which thus chars and decomposes blood, mucus, and other organic substances ; and by this action it becomes itself decomposed and partially lost.*

3. The quantity of oil of vitriol present in that portion of the vomited matter handed to me was about four grains, or two drops.

4. That sulphuric acid does not exist naturally in the secretions of the mouth, stomach, or fauces ; and although what are called sulphates (salts) are present, they are in exceedingly small proportion.

5. That sulphate of magnesia does not exist naturally in the secretions : hence the small portion of this salt, which was found in the vomited matter, must have been produced by the union of the magnesia given to the child with the oil of vitriol which must have been swallowed.

6. That the liquid (No. 3) was only part of the acid vomited matter neutralized by magnesia.

\* The iodic acid test proposed by MM. Taufflieb and Devergie, and recommended by Orfila, for the detection of sulphuric acid in stains upon articles of dress, could not here be applied without leading to a fallacious result. I have elsewhere shewn (*Medical Gazette*, vol. xxxviii. p. 954) that mucus, blood, and all substances containing sulphur, decompose iodic acid and set iodine free. In this case, the sulphuric acid was actually mixed with decomposed blood and mucus. A portion of the linen, heated in a tube, produced easily blue iodide of farina on starch paper moistened with iodic acid ; but there were no means of determining whether the effect was due to the decomposition of the sulphuric acid or of the animal matter with which the vegetable fibre was impregnated.

† I place these words in italics, as the defence set up was that the acid was taken in so *diluted* a state, as not to have the power of *carbonizing sugar* ! See Mr. Tatham's evidence, p. 417.

7. That the aniseed mixture was an innocent preparation; that it contained no free sulphuric acid, nor any other substance which could produce the dark tarry appearance and intense acidity observed in the matter vomited by the infant.

8. That the fibre of the napkin did not naturally contain any sulphuric acid or sulphates; but that, from the discolouration, dampness, rottenness of the fibre, and, above all, the action of chemical tests, it is proved most clearly that sulphuric acid, or matter analogous to that vomited by the child, must have been spilled over it. The appearances are exactly explained by supposing that the child had been sick on the napkin, or that its mouth had been wiped with it after vitriol had been swallowed.

ALFRED S. TAYLOR, F.R.S.

*Lecturer on Medical Jurisprudence  
and Chemistry in Guy's Hospital.*

CHEMICAL LABORATORY, GUY'S HOSPITAL,  
*Saturday, July 4, 1846.*

This report was drawn up for the Magistrates of the Wandsworth Police Court. After a full investigation of the case, the servant, Mary North, against whom strong suspicion had arisen, was committed to take her trial for the attempt at murder. The child died before the period fixed for the assizes; and a coroner's inquest was held on the 29th of July. The above medical facts were deposed to by Mr. Tatham and myself at the inquest; and, upon hearing the evidence of several witnesses in reference to certain suspicious acts on the part of the prisoner, the jury returned a verdict of wilful murder.

#### THE TRIAL.

The prisoner, Mary North, was indicted at the Guildford Assizes, Aug. 1, before Mr. Justice Coltman, for the murder of the child Mary Ann Barker, by administering to it oil of vitriol.

Mr. Clarkson conducted the prosecution, and Mr. Locke appeared for the defence.

The prisoner, who was nineteen years of age, pleaded *not guilty* to the charge of murder.

The first witness called for the prosecution was the mother of the deceased child, Mrs. Barker. Her evidence was to the following effect. The prisoner was her servant, and it was part of her duty to take care of the infant child, which was four months old. On Wednesday, the 1st of July, between eleven and twelve o'clock, she sent the prisoner for some ingredients to make blacking, one of them being oil of vitriol. Immediately after dinner witness commenced mixing the ingredients in a large pan in the washhouse, and the last thing she put in was oil of vitriol. The bottle contained four ounces, and she used about half. The prisoner handed her the bottle, and remarked, "What dangerous stuff it was; and that Leech (meaning the oilman) would not let her have it without telling him whom it was for." Witness said, "Of course not: it was a deadly poison, and he could not tell what she wanted it for. He could not know whether she was going to take it herself, or administer it to any one else." The prisoner could read print and writing, and the bottle was labelled "Vitriol—Poison." After witness had used the vitriol she gave the bottle to prisoner, and told her to put it on the high shelf, where the children could not get to it. Witness afterwards turned away and left the washhouse; therefore she could not say whether she did as she was told or not. Nothing particular occurred till the evening, when she was sitting alone in the parlour, a little before seven o'clock, when the prisoner came in with the child in her arms and a tea-cup. She said she thought that baby had the stomach-ache, and a little aniseed would ease it. Witness then unlocked a closet and took out a bottle of aniseed: *she put about a tea-spoonful into the cup, and a lump of sugar*, and then put back the bottle, and locked the secretaire. Witness then went into the kitchen with the cup, *and poured some hot water in it—a tea spoonful and a half.\** She afterwards gave the infant a teaspoonful of the mixture, and left the cup containing the remainder on the table. Witness told the prisoner to walk up and down with the child, and returned to the parlour, leaving

\* It is important to observe *the order in which the articles were mixed*. In the defence it was alleged that this aniseed was in reality oil of vitriol. It will be seen that the liquid, whatever its nature, was first mixed with a lump of sugar.



her eldest daughter (a girl between ten and eleven years of age) and the other children in the kitchen. There were no white marks about the child's mouth after it had taken the aniseed : it had been vaccinated a week previously, and was very restless. *Not more than five minutes* could have elapsed, when witness heard her daughter say, "Mary, don't hurt baby ;" and immediately afterwards the prisoner called her, and, as she was approaching, said, "Oh, dear me, ma'am, what is the matter with baby?" She could not say whether the prisoner was or was not coming towards her when she said so. Witness took the child from her, and observed that its eyes were strangely agitated, its mouth and tongue foaming and swollen, and she exclaimed, "O my God ! what is the matter with baby ? this can never be the aniseed." Witness did not remember whether the prisoner said any thing, for she was almost mad. She told her to run for the doctor, and Mr. Howell came in a few minutes. She shewed him the infant, and asked him what was the matter with it ; and Mr. Howell asked her if she had any vitriol in the house. In consequence of what Mr. Howell said, she afterwards went to look for the vitriol, and found it on a lower shelf in the washhouse, where she let it remain until the next morning, when Mr. Tatham, the partner of Mr. Howell, asked for it. She then locked it up, and subsequently delivered it to Inspector Busain, as likewise a napkin. The aniseed was taken away by Mr. Howell, and Mr. Tatham brought it back the next morning. The child did not vomit until medicine had been given, and what it vomited witness preserved. The cotton gown produced she had on that day : it is marked in various places with brown spots, and there are also stains from vomiting. The prisoner would have been two years in her service next Michaelmas : she intended to part with her then, but she had not told her so. She did not consider the prisoner was fond of children. She had not found fault with her that day.

This witness underwent a long cross-examination by the prisoner's counsel, the main object of which was, to shew that, by some unfortunate mistake, she might have given oil of vitriol to the child instead of, as she alleged, aniseed mixture. The two bottles were of the same colour (green), the same shape, and very much alike in appearance, that which

contained the vitriol being rather smaller. She was closely questioned respecting the articles which she kept in the closet whence the aniseed bottle had been taken; but she swore most positively that vitriol had never at any time been kept in that closet. It turned out, however, that this closet had not been searched after the occurrence; and thus it was inferred to be possible that a bottle of vitriol might have been there among numerous other bottles, as the witness had before purchased vitriol for the making of blacking. An important fact was, however, elicited, which tended to prove that such a mistake could not have been made, namely, that after mixing the liquid with sugar in a perfectly *clean white cup*, and adding water, she tasted the mixture before giving it to the infant, and did not perceive that there was any hot or acid taste, but that it was exactly like aniseed mixture which she had before frequently given to the child. She declared that no bad effects followed when she gave the two teaspoonfuls of the mixture to the deceased, and that she put the cup on the table with part of the mixture still left in it. The child had had some milk and water given to it at half-past five, and no other food was given to it before it had the aniseed at a quarter before seven. According to her statement, about *five minutes* had elapsed when the alarm was given, and before she returned into the kitchen. What induced her to return was, that she heard her daughter, Elizabeth Barker, tell the prisoner not to hurt the baby. The witness gave a very circumstantial account of the manner in which the events took place; and her statement relative to the order in which she mixed the sugar and the aniseed, as well as the time (*five minutes*) which had elapsed from the giving of the aniseed to the time when she was induced to return into the kitchen, remained unshaken. No one but the prisoner was in the kitchen or pantry, and the prisoner had the care of the child.

When asked whether she had not denied that there was any vitriol in the house, upon the inquiry being made by Mr. Howell and Mr. Tatham, she said that in her confusion at the time she had forgotten whether she had said yes or no.

She was asked to explain the cause of certain spots or stains, evidently produced by vitriol, on the front and lower

part of a dress which she wore on the 1st of July. These she accounted for by saying that she had the child on her arm, with its face downwards, immediately after she saw it affected in the manner described, and the stains she believed had been caused by the liquid that had drained from its mouth. Counsel for the prisoner attempted to shew that these stains might have resulted from the use of vitriol in the morning, while she was engaged in making blacking. She stated, however, that she had worn a thick apron to protect her dress, which covered both the front and sides. The apron had not been examined, and was not produced, consequently it was left to be inferred that the stains might have been accidentally caused by the making of blacking in the morning, and not by the acid matter alleged to have been discharged from the mouth of the child.

Elizabeth Barker, the daughter, a girl of eleven years of age, corroborated the evidence of the preceding witness. She stated that she saw her mother give the deceased something out of a cup, and that as soon as her mother's back was turned she swallowed what remained in the cup. She felt no bad effects from it; she was not ill; and what was in the cup was sweet and pleasant to the taste. She thought it must have been about *one* minute after the baby had had the medicine that she swallowed what remained in the cup. The prisoner took the baby from her mother, and when her mother left the kitchen, she (the prisoner) went with the child into the pantry, on a shelf in which the bottle containing the vitriol was subsequently found. In about *two* or *three* minutes afterwards she heard the baby make what she described as a "wheezing" noise; and she called to the prisoner in the pantry not to hurt it. She could not see what the prisoner was doing with the baby in the pantry, but she heard no one come in or go out; and on calling to her, the prisoner came to the kitchen for a napkin to wipe the mouth of the child. This appeared "all white" to the witness. After she had called out, her mother came in, took the child from the prisoner, and sent her (the prisoner) for a doctor.

This witness was rigorously cross-examined respecting the swallowing of the contents of the cup, and the time that had elapsed before the prisoner came from the pantry into the



kitchen after having taken the child from her mother ; but her evidence appeared to be, in all these respects, satisfactorily given, some allowance being made for the difficulty which a young child must experience in forming an opinion of the precise lapse of time. Prisoner's counsel endeavoured to make it appear that the word "wheezing" was not likely to be used by a child, and that it must have been suggested to her by others, leaving it to be inferred that she had been drilled to give her evidence in the way she had done. She admitted that she had said nothing to her parents about the conduct of the servant and the hearing of the wheezing noise, until the day following that on which the child was taken ill.

Mr. Howell, Surgeon, of Wandsworth, deposed to having been called on the 1st of July to see the child, and from the appearance of its mouth, and the symptoms generally, he inferred that vitriol had been given to it. Upon putting the question whether there was vitriol in the house, both the mother, Mrs. Barker, and the prisoner, distinctly denied it, although it appeared they had had vitriol that morning in making blacking. A mixture of magnesia and carbonate of soda was immediately given. The subsequent treatment was left to Mr. Tatham. Witness had no doubt that death was caused by vitriol. The vitriol and aniseed had a somewhat similar colour, and the appearance would not be essentially different when the vitriol was mixed with a small quantity of water. The action of concentrated vitriol would be to corrode and destroy the parts which it touched, and the effects would be produced very speedily. When asked, in cross-examination, how long a period would elapse before symptoms observable by non-professional persons would occur, he said, in about fifteen or twenty seconds from concentrated vitriol, and in about thirty seconds from a mixture of equal parts of vitriol and water. He did not think their appearance would be longer protracted.

Mr. Tatham described the circumstances under which he was sent for to the child, and the condition in which he found it. He deposed to the facts already stated in his medical report of the case, and referred the death of the child to exhaustion and starvation, owing to the destruction of the lining membrane of the mouth, stomach, and intes-

tines, by the action of vitriol. The examination of the body shewed that the child was in a healthy condition, and that there was no disease to account for death. He could only ascribe this to the effects of the sulphuric acid; the child never having been able to swallow or take sufficient nutriment in a natural way for its support. It had been kept alive twenty-five days by artificial means. He identified some of the articles which he had handed to Mr. Taylor for analysis. He believed the aniseed mixture to be an innocent preparation, and unlikely to cause any bad effects, even if the whole were swallowed. When he went to the house, about two hours after the occurrence, he saw on the table a cup. He smelt it, and found that it had contained aniseed; and Mrs. Barker informed him that it was out of this cup she had given the aniseed to the child, *by mixing a teaspoonful of it with a lump of sugar, and then pouring on about as much water* from the tea-kettle in the kitchen. There was no appearance of vitriol in this cup, or of its having contained vitriol. When he questioned Mrs. Barker about having vitriol in the house, she, in the first instance, denied it; although it appeared that, upon his arrival, she knew the bottle was in the pantry, and had desired her daughter Elizabeth Barker to remove it from the lower shelf and place it on one above. The prisoner also denied that there was vitriol in the house.

The cross-examination was chiefly directed to the effects of vitriol, both in the diluted and undiluted state, and the time required for the production of symptoms likely to be observed by persons not in the profession. Mr. Tatham said that the difference in colour between the vitriol and aniseed, as seen in green bottles, was not very striking; and the dilution of vitriol with an equal quantity of water would produce no remarkable change. He had not the least doubt of the presence of sulphuric acid in the matter vomited by the child. He thought the symptoms produced by strong vitriol would be immediate, and would be indicated by whiteness of the mouth, and the escape of froth: these would be among the first symptoms. Dilution would delay their appearance.\*

\* I have here given an abstract of Mr. Tatham's evidence from recollection, but I subjoin an additional and more circumstantial account of the examination

Mr. Alfred S. Taylor received from Mr. Tatham various articles for analysis. (See report ante p. 403). One bottle

which this gentleman underwent. It illustrates, in a remarkable degree, the unfair use which may be made by barristers and attorneys of the results of chemical experiments performed in court.

Mr. Tatham examined by Mr. Clarkson.

*You were called to Mr. Barker's child, Mary Ann Barker, on the evening of the 1st of July last?* It was at about nine o'clock.

*Where did you find her?* In the prisoner's lap, apparently in a state of collapse. The lips, tongue, and whole mouth were white, like soaked parchment, excepting two or three spots on the tongue, which were bright red, as if portions of membrane had been destroyed.

*What did you say?* I said the child had had vitriol given to it.

*Continue what you have to say.* The mother and the prisoner both said there was no vitriol in the house. Mrs. Barker said she had only given the child some aniseed, and the prisoner confirmed her statement. Mrs. Barker shewed me a cup which had nothing in it, but which smelt strongly of aniseed. Aniseed water is what is in general use, but that aniseed is a spirituous compound—a sort of liqueur. She said that the cup was the cup she had used. I do not know where she took that cup from; certainly she did not go out of the room to fetch it. Mrs. Barker gave me a basin containing some dark grumous fluid, which she said the child had vomited. That vomit contained vitriol. I then turned my attention to the child, and desired them to carry out the treatment which Mr. Howell had prescribed. I went home, taking with me the basin of vomit. I got the bottle, now on the table, containing aniseed, from Mr. Howell. I returned to Mr. Barker's, and found Mr. Barker in the kitchen. I told him his child had had vitriol given to it; that it could not be the aniseed, I then held in my hand, which had produced so much injury to his child's mouth; and I tasted it to convince him. Mrs. Barker said it was impossible the child could have had vitriol. I said there was, or had been some in the house. Mrs. Barker then, addressing her husband, said, "To be sure; we were making blacking in the morning;" and then asked the prisoner where she had placed it. The prisoner said that she had put it on the top shelf, where her mistress had told her to put it. Mr. Barker then went into the back kitchen, and produced that bottle now on the table, and which then contained clear concentrated sulphuric acid. Mrs. Barker and prisoner both appeared much excited, and the prisoner shewed every anxiety about the child. The napkin produced, Mrs. Barker shewed me at eleven o'clock the following morning. I believe the injuries I saw were the effects of sulphuric acid. Sulphuric acid would destroy the *mucous membrane of the mouth and tongue*, and produce intense pain. Sulphuric acid, so administered, would cause a person to make a noise *similar to the partial escape of fixed air from a ginger-beer bottle, or soda-water bottle*. I conducted the post-mortem examination of Mary Ann Barker's body, and the appearances I saw indicated the destruction of the mucous membrane of the stomach and duodenum during life, and which caused death by inanition and absolute starvation. I prolonged life by the administration of nourishing injections.



contained oil of vitriol in a pure and concentrated state: it was slightly coloured, but it possessed most corrosive properties. The effect of such a liquid would be to produce symptoms immediately on contact: it would corrode the mouth

*What strength of diluted sulphuric acid would serve to produce such injuries as you saw?* The dilute sulphuric acid of the Pharmacopœia, which is one-fifteenth acid to fourteen-fifteenths water, or thereabouts, would produce injury to the mucous membrane of the mouth; but what I saw must have been produced by a much stronger fluid. An overdose of that aniseed might embarrass a child, but would produce no dangerous effects.

*By a Jurymen.—What would be the difference, if any, in the appearance of vitriol and water, and aniseed and water, when separately mixed; and would either two, when mixing, produce any effervescence, or other effect which would distinguish them one from the other?* Hot water, as in this case, being added to the aniseed, with a lump of sugar, some bubbles would escape from the surface whilst the sugar was dissolving; but in mixing sulphuric acid and water hot, the fluid would remain clear. There might be a trifling difference perceptible afterwards in the colour of the mixture.

*By Mr. Locke*—An ordinary person might not notice any difference in the two fluids, contained as they are in two bottles so similar, unless their attention was directed to it. I should discover it.

On further reflection, it occurred to me, that I had not included the sugar in speaking of the mixing sulphuric acid and water, in answer to the jurymen's question; and bearing in mind that Mrs. Barker had invariably asserted, and had that day sworn, that she had put aniseed first, then sugar, and lastly water, I produced in court a mixture of one drachm of sulphuric acid, with a lump of sugar, and then a drachm of water added to them. The result gave a black fluid, at a very high temperature. Mr. Locke begged to know if I had mixed the three ingredients in the following order—the acid first, then the water, and, lastly, the sugar. I said, No. He asked what would be the effect. I said, I thought something similar to the other mode. He then begged me to make such a mixture before the court, telling me to put *double the quantity of water* to that before used. This I did, and the effect was a deep yellow fluid, of intense heat, and which gradually became darker on cooling. The quantity of sugar left for this experiment was only a few grains. This Mr. Locke described as a mistake, and said *it went to prove the possibility of Mrs. Barker's having used the vitriol in lieu of the aniseed*. Now Mrs. Barker, in all her examinations, including her evidence that day in court (and her statement on this subject was confirmed by the prisoner herself, on the night of the accident), had stated most distinctly that she put the aniseed first in a cup, then a lump of sugar, and afterwards added hot water out of the tea-kettle; so that, had she used vitriol instead of aniseed, an ebullition would first have taken place, and then a black fluid product at a very high temperature would have appeared around the sugar, surely calculated to arrest her notice ere she administered it to the child as an aniseed mixture.

and tongue. The matter vomited by the child consisted of blood and mucus, darkened by the chemical action of the acid; and the two teaspoonfuls contained about four grains of the concentrated vitriol. Another portion of the vomited matter had been previously neutralized by magnesia; and in it, with mucus and blood, a small quantity of sulphate of magnesia only was found. The aniseed mixture was an innocent preparation, and could not have produced the symptoms from which the child had suffered. The napkin contained, in the dark-stained portions, sulphuric acid, or oil of vitriol, and its fibre was quite corroded and destroyed. A question then arose respecting the identity of the napkin; and it turned out that it was only one of many which had been used on the evening that the child was taken ill. It was not proved to have been the one with which it was alleged the prisoner had wiped the mouth of the deceased. In cross-examination the witness stated that he believed the stains on the napkin to have been produced either by the child being sick upon it or by its having been used to wipe up the vomited matter; it was impossible to say which. The dark brown marks were exactly such as would be caused by a liquid like the vomited matter submitted to analysis. A great part of the sulphuric acid in the vomited matter was in the free or acid state: a small portion only had been neutralized by magnesia.

Some questions were then put on the nature of the spots or stains on the front of the dress of Mrs. Barker. These stains were of two kinds; two or three of a bright orange-yellow colour with the fibre of the cotton corroded; while others were of a larger size, and had the appearance of being smeared. These were of a brownish colour; and a quantity of brown or decomposed animal matter had evidently become dried into the dress in the situation of these spots, so as partly to conceal the yellow colour. The witness said that the dye of the dress was formed of logwood mixed in patches with iron mordant; and the change of colour was owing to the action of sulphuric acid. All the strong mineral acids, including the sulphuric, turn the logwood dye of a yellow or yellow-brown colour. The bright spots he believed to be owing to the action of strong sulphuric acid,

either pure or contaminated and darkened by organic matter; for the chemical effect depended on the strength of the acid, and not on its being absolutely pure and free from admixture with organic matter.\* The larger stains had probably been caused by vitriol in a more diluted state, and apparently mixed with blood and mucus; for the dried matter mixed with the acid was like that found in the vomited liquid and diffused in patches on the napkin.

\* Whether these stains on the dress had been produced by pure sulphuric acid, or by sulphuric acid coloured by the carbonization of organic matter, was very material. The former assumption might lead to the inference that the mother had given the child the acid by mistake, and had dropped some on her dress in so administering it: the latter, that the stains had been caused in the way described by the mother, *i.e.* by turning the child down over her arm when she first saw it ill in the kitchen. A portion of strong acid hanging about the mouth, or ejected from the fauces and the stomach, might have drained out and have fallen on the dress. On the former assumption there is no reason why there should have been different sorts of stains; and the same remark would apply to their assumed accidental production in the morning while the witness was engaged in making the blacking. On the other hand, irrespective of the appearance which, in my mind, established the *identity of the diffused stains on the dress with those on the napkin*, it is not impossible that the bright marks had been produced by some of the vitriol draining from the mouth and fauces in the first instance, while the wider patches had arisen from some of the acid in a more diluted state falling on the dress subsequently, during the act of vomiting.

By the kindness of Mr. Emlyn, chemist, of Guildford, I was enabled to perform some experiments on this subject the day before the trial, as I had not before that time had any portion of the dress placed in my hands for examination. Sulphuric acid, whether pure and concentrated, diluted with its bulk of distilled water, or mixed with its bulk of ovalbumen, and thereby darkened in colour, produced immediately on the dress bright yellow-brown spots; and after twenty-four hours it was impossible to say which had been produced by the pure acid or by the acid darkened with the admixture of organic matter. The diluted sulphuric acid of the Pharmacopœia produced a similar change of colour, but much more slowly. The inference from these experiments was, that the brightness of the yellow-brown spot was no proof whatever that sulphuric acid in a pure state was necessary to its production. The statement of the matter, therefore, as to their probable origin, was perfectly consistent with chemical facts. These remarks will shew what a wide and unexpected range chemical evidence may take on a trial for murder. It was necessary here to know the nature of the dye used in the dress, the action of mineral acids upon it, the kind of mordant (acetate of iron) used for producing a variety in the pattern, and the influence of dilution, as well as of the admixture of organic matter with the acid in modifying the chemical changes.



In the matter vomited he found only altered or decomposed blood, mucus, sulphuric acid, and a very small quantity of sulphate of magnesia. He found no other substance. There was no other kind of poison present.

It should be remarked, that, in the cross-examination of the witnesses acquainted with the prisoner, no fact was elicited to shew that she had ever ill-treated the deceased; that there was any cause of quarrel between her mistress and herself; or that any motive whatever had existed for the perpetration of the crime with which she was charged.

This closed the case for the prosecution,—a statement made by the prisoner not having been admitted as evidence.

In the defence, a very ingenious address was made by Mr. Locke, in which he attempted to account for all the facts, without admitting that the prisoner was the party who had caused the child's death. He allowed that the cause of death was made most clear by the medical evidence, and that there could be no doubt the child had died from the effects of oil of vitriol; but he contended that the mother, Mrs. Barker, was the person who had administered it by some unfortunate mistake, and that, in order to shield herself from the heavy responsibility of having caused her own child's death, she had charged this crime upon her maid-servant, a girl whose character was unimpeached, and who could have had no conceivable motive for destroying a child towards whom it was proved she had always manifested kindness. He relied strongly upon the entire absence of motive; for when guilt was to be inferred from circumstances, a motive for such a crime as murder should always be apparent, and without that it was impossible to convict the person accused of the offence.

The evidence against the prisoner was entirely circumstantial; and the caution with which circumstances should be received was proved by the mistake made in reference to the mixture alleged to have been given by the mother. He contended that she had given vitriol instead of aniseed; and that as the closet whence she had taken the mixture had never been searched, it was probable that even now a bottle might be still there containing the poison. In answer to this, it had been stated in the medical evidence, that, if such

a mistake had been made, the mother would have known it by a change of colour produced from the chemical action of the vitriol on the sugar, and a mixture was produced in court illustrating the effect; but he caused the witness to perform the experiment *in a different way*, and what was the result?—There was no change of colour, as they, the jury, had seen. *Therefore the mistake might have been made by Mrs. Barker.* This shewed the danger of relying upon medical inferences, and the necessity for having clear proof in a court of law. *But for his suggestion on a different mode of performing the experiment* the jury might have gone away with a false impression against the unfortunate prisoner.\*

What was there to oppose the view that the mother had given the poison? Only her own statement and that of her daughter. He contended that the evidence of the mother was not worthy of credit. She had denied to both the surgeons, and on two occasions to Mr. Howell, that there was any vitriol in the house, although, on one of these occasions, she had only shortly before requested her own daughter to take the poison from one shelf and place it upon a higher shelf out of the reach of the younger children. Why was not this precaution taken before? She stated that she desired the prisoner to put it carefully away on the top shelf, but did not see that her order was obeyed; and after the accident, and when some intimation had been given about the child having taken vitriol, she said she had found the bottle on the lower shelf. This fact alone, in his opinion, shewed that no reliance could be placed upon her evidence respecting other circumstances. Mrs. Barker alleged that she could not have made a mistake: but let the jury look at the bottles, and see how similar they were; and let them remember the admission of the medical witnesses, that the colour of the vitriol was very similar to that of the aniseed, and that the addition of a little water to the vitriol would only have the effect of rendering the colour somewhat lighter. Then there was the alleged tasting by the mother, the swallowing of the

\* Although this will be made a subject of comment hereafter, it will be observed that the learned counsel draws the inference, that a mistake had been made by Mrs. Barker, *because different* results followed from a mode of mixing the ingredients the *reverse* of that already repeatedly sworn to by this witness.

dregs in a cup by the daughter, and the smelling of the aniseed in a cup by Mr. Tatham. With regard to the mother and daughter, the question would be whether the jury could believe their testimony on these points; and with respect to aniseed being smelt, it was possible that some might have been in a cup lying about the kitchen. Mr. Tatham was not there until two hours after the occurrence; and it was possible that the cups and other vessels about the kitchen might have undergone some change. He argued that the appearances in the child's mouth were in favour of the view that the vitriol had been taken mixed with water, for the membrane *had not been dissolved or corroded off*; whereas if the vitriol had been concentrated this appearance would have been met with. With respect to the dress, he contended that the stains described by Mr. Taylor had been caused while Mrs. Barker was engaged in making the blacking. That witness had said the apron would protect the dress; but where was the apron? It was not produced in court, and so far the prisoner had a right to any inference which might be drawn from its non-production. It was impossible, from Mr. Taylor's evidence, that the stains could have been produced on the dress by the matter vomited from the child's stomach. Magnesia had been given to the child: the witness found magnesia combined with the oil of vitriol in the vomited matter: *it was therefore neutralized, and could not act upon the dress*. The stains on the dress could not be in any way made evidence against the prisoner.

The evidence of Mr. Taylor further shewed it to be impossible that the statement of the mother could be true. She said she had given aniseed, a strong-smelling substance, but no aniseed was found in the liquid which the child had vomited. According to the witness, nothing had been discovered in the vomited matter but blood, mucus, oil of vitriol, and magnesia. He had specially questioned him on these points; and he would put it to the jury, whether, from this fact, it was not more likely that vitriol had been given to the child by the mother. *Had aniseed been really given, some of it would have been found*. He called upon the jury, therefore, to reject her evidence altogether.

With regard to the daughter, the jury would bear in mind



that this young girl had said nothing which affected the prisoner until the day following, although the whole of the occurrences had been the subject of conversation in her hearing the night before: she had also made use of a word, "wheezing," which a child of her age was not likely to employ except upon the promptings or suggestions of those who were older than herself. This witness had no doubt been influenced by what she had heard her parents say; and he thought it would not be safe for the jury to find the prisoner guilty upon her testimony. If, therefore, the evidence of the mother and daughter fell to the ground, there was nothing against the prisoner, and she must be acquitted of this charge.\*

Mr. Justice Coltman shortly summed up the case from his notes. He told the jury that there were two questions for their consideration: — 1. The cause of the death of this child — whether it arose from natural causes, or, as charged in the indictment, from the administration of vitriol: if the former view were adopted, there was no crime committed, and the prisoner must be discharged. On this point, however, he thought there could be little doubt. The evidence of the medical witnesses left it certain that the child must have died from the effects of oil of vitriol, and from no other cause whatever. The second question was the more important; and this required great consideration, as upon it must depend their verdict for or against the prisoner. This was, Who administered the poison to the deceased child? His lordship then read notes of the evidence of each witness, commenting upon it as he proceeded. The child was of that age that it could not be supposed to have taken the poison by itself. It was in the care of the prisoner; and, according to the evidence of Mrs. Barker and her daughter, she had it in her arms at the time when the symptoms were first observed. It also appeared that no one could have had access to the child, or have entered the pantry or kitchen during the few minutes that the mother was absent. The

\* I have here set down the substance of the arguments used by the learned counsel to the best of my recollection. It is possible that some of his statements may have been omitted, but the speech was so rapidly delivered, in a crowded court, as to render the taking of notes impossible.

girl had herself fetched oil of vitriol that day for making blacking. It was labelled "Vitriol—Poison," and she must have been quite aware of its effects. It was alleged, in defence, that the mother might have administered it by mistake; and it did not appear that the closet from which the alleged aniseed mixture had been taken had been searched after the occurrence. The bottles containing the two liquids were not unlike, and the liquids were not very different in appearance. It had been stated in the medical evidence that such a mistake was not likely to be made, because if vitriol had been used it would have changed the colour of sugar by blackening it. This was accordingly proved to be the case; but when the experiment was performed in a different way, the result, "for some reason or other," was different—there was no change of colour: therefore, this left that part of the case uncertain. The mother, naturally enough, had tasted the liquid before giving the mixture to the deceased, the daughter had drained the cup, and one of the witnesses had smelt aniseed in a cup, and stated that aniseed, and not vitriol, had been contained in it; but what was vomited by the child had no smell of aniseed. The jury would consider whether, under these circumstances, a mistake was or was not likely to have been made. One other fact was also worthy of their notice. The medical witnesses had said that oil of vitriol was a poison which produced intense pain: a child which had swallowed it would be therefore likely to cry out; but no cry was heard while the child was with the prisoner in the pantry: hence the jury would consider whether it was likely that the poison could there have been given. It did seem strange, if the poison was there given, that the child did not cry or make a loud noise, as it must have suffered intense pain. Both Mrs. Barker and the prisoner denied that they had vitriol in the house, although they had been so recently using it for the purpose of making blacking. The confusion and anxiety of the mother might explain this, so far as she was concerned; but it appeared that she had denied any knowledge of having vitriol to one of the medical witnesses, when she had only shortly before given orders to her daughter to remove the bottle containing it from a lower shelf in the pantry, where she stated

she found it after the accident, and place it on a higher shelf. This was certainly a very strange circumstance.

With regard to the prisoner, no motive for destroying this child had been shewn. It appeared that there was no cause of quarrel or disagreement, and that the prisoner was uniformly kind to it. This was a strong circumstance in her favour. Admitting that she gave it the poison while in the pantry, it was still possible that she had given it without intending to destroy its life. Although she had procured the vitriol, and was ordered by her mistress to put it away safely, she might, while in the pantry, as some hours had elapsed, have forgotten the circumstance, and have momentarily mistaken the vitriol bottle for that containing aniseed, as they were much alike, and their contents of the same colour, and thus have given the vitriol innocently for aniseed. To avoid the consequences of this mistake she may have afterwards denied that she gave it the poison. Admitting this to be the explanation of the facts, the crime would be manslaughter, and not murder; and upon that the prisoner might be found guilty. To support the charge of murder, it must be proved, or inferred from her conduct, that she gave the vitriol wilfully and maliciously to the child, and with the full intention of destroying it. Something had been said about circumstantial evidence; but in cases of this description the evidence was almost always circumstantial, and it was properly received in law. The jury must, however, see that the circumstances admitted of no other explanation than that which established the guilt of the prisoner, before they returned a verdict of guilty: and if the evidence against her should be, in their judgment, deficient, they would give her the benefit of any doubt.

The jury, after a very short deliberation, returned a verdict of Not GUILTY.

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REMARKS.

In most cases of poisoning two medical difficulties present themselves: 1st, to establish the cause of death; and 2dly, to shew that the deceased could not have designedly or accidentally taken the poison himself. Neither of these difficulties existed in the case here reported: the *cause*



of death was clearly traced by the medical evidence to the operation of sulphuric acid, while no suspicion could for a moment be entertained that a child of four months had taken the poison itself. Hence, then, it followed, that the oil of vitriol which here had caused death must have been either wilfully or through mistake administered to the deceased.

*The Cause of Death.*—Upon this part of the subject but few remarks are required. The report of the case shews that although the child was labouring under the effects of vaccination at the time there was no bodily illness to account for death, nor any post-mortem appearances, irrespective of those produced by the acid, to which a fatal result could be referred. The child had partially recovered from the primary effects of the poison, and up to the end of the first week there was some slight hope of its recovery. From that time, however, it began to sink from innutrition. The lining membrane of the alimentary canal was destroyed, and this led to death by starvation. It is remarkable that so young a child should have survived for the long period of *twenty-five days*; for the dose of sulphuric acid, judging by the extensive local effects produced, must have been comparatively large. Thus Mr. Tatham reports that when he first saw it the lips and tongue were quite white, as well as all the mucous membrane of the mouth, as far as he could see, looking like soaked parchment. With respect to the dose administered, nothing, of course, was or could be known. Thirty drops of this acid administered by mistake have been known to destroy the life of a child a year old in twenty-four hours:\* and there can be no doubt that a smaller quantity might destroy life in a much shorter time if the larynx should happen to be attacked by it in its passage. In this case, however, the larynx appears to have escaped.

The great question in the case, both medically and legally speaking, was, who administered the poison. The proof of *administration* is commonly based on the moral circumstances and the general evidence; but when these leave the matter unexplained, then recourse must be had to medical science. As to how far a medical man is justified in observing and collecting moral circumstances, some remarks have

\* Medical Gazette, Vol. xxix. p. 147.

been already made in a former Number of these Reports.\* The best authorities agree in this, that a medical witness, in forming an opinion, should be allowed to employ, without restriction, *such facts as cannot be invested with their full value without the assistance of medical knowledge.* To all who are acquainted with the proceedings on criminal trials, where direct proof of the administration of poison can very rarely be procured, it must be obvious that many moral circumstances, unless explained by medical evidence, may be made to take an undue bearing against a prisoner; and if it be right to interfere for the prevention of injustice, a medical witness is equally called upon to interfere, although his medical opinion may be adverse to the case of the prisoner. Medical and moral facts are often so completely interwoven, that to insist upon their separation, and to restrict medical evidence to medical facts only, would be tantamount to occasionally allowing an innocent person to be convicted and executed, and a guilty person to escape punishment, when the means for exposing the mistake were at hand. Some admit the correctness of this reasoning only so far as it applies to the extrication of a person accused of crime: in other words, they are willing to "lean to the side of the prisoner." If, however, the reasoning be correct, the rule is equally applicable both ways, and a medical witness has no more right to lean to the side of the prisoner than he has to the side of the Crown.

In cases of poisoning, when the question relates to administration, the medical evidence is often capable of throwing great light upon moral circumstances; and probably there is no instance in which this fact is more strikingly brought out than in cases of poisoning by the strong mineral acids. I have quoted from Dr. Christison's lecture a remarkable instance of this kind in the Number of the Guy's Hospital Reports already referred to,† in which, although no one witnessed the criminal act, the administration was clearly brought home to the wife of the deceased, by a series of medical and moral circumstances taken together. In another case, recently tried at the York Assizes (July 1846), a man was convicted of the murder of

\* October, 1841, p. 285.

† Oct. 1841, p. 291.

his infant child by the administration of oil of vitriol. The moral circumstances shewed that the poison had been procured by the prisoner; that the infant was not likely to have taken it itself; and although the child had been frequently fed during the evening, the commencement of the action of the poison was traced to a few minutes during which the child was left alone in the care of the prisoner. Here the medical evidence had a very important bearing, for it was most properly insisted that the effects caused by oil of vitriol are almost instantaneous, and admit of no delay in their production. The prisoner's defence was, that he was quite innocent of the charge, and that he had neither bottle, nor spoon, nor any thing else in the house; that he put the child into the crib, and that it began to vomit; that its mother came down stairs, and he said the child was then throwing up something, and he went for a doctor. The prisoner was convicted and executed. The reader will here perceive that the administration was clearly brought home to the prisoner by this well-known effect of the mineral acids in producing symptoms *immediately*. Had the poison been arsenic, the proof of administration would have failed, because this poison may give rise to symptoms within a very variable period, sufficient to have included one or more of the meals which the child had made in the course of the evening.

The evidence tended to shew that the sulphuric acid in the case reported in this paper, must have been administered by mistake either by the mother of the child, or wilfully or by mistake by the prisoner, Mary North, who was accused of the crime. I here propose to consider how far *medical facts*, which were very imperfectly brought out at the trial, will throw light upon the question of administration. The case having been already decided by a jury, the parties concerned are placed beyond the reach of being affected by the remarks which may be here made. My desire is to shew, as a warning in future cases, how most important medical facts, easily susceptible of proof, may be overlooked, mis-stated, or misrepresented in a court of law. Every trial for criminal poisoning, properly considered, may be turned to profit; and it appears to me that this trial involves many



points of great interest to the medical practitioner, and of considerable importance to the administration of justice.

The first question which presents itself is, *Within what period of time does concentrated oil of vitriol begin to produce symptoms or effects likely to be observed by any bystander?* The import of facts of this nature, as Dr. Christison justly remarks, can be properly appreciated only by the medical witness; for he alone (provided he have experience on the subject) can be conversant with the symptoms which poisons produce, the intervals within which they begin to operate, and the circumstances in which their operation may be put off or accelerated.\* He subsequently remarks, in reference to a case elsewhere quoted,† that sulphuric acid, when it occasions the violent symptoms observed in this instance, invariably excites them in a few seconds, or in the *very act of swallowing*.‡ This remark refers to an adult. In the case of an infant of four months they are not likely to be longer delayed. Orfila is equally explicit regarding the period for the commencement of symptoms. In the last edition of his *Toxicology* he says, in reference to the strong mineral acids: "*Whether concentrated or moderately diluted, scarcely have they been swallowed than they produce the greater number of the following symptoms:—burning heat in the mouth, throat, and stomach, acute pain, evolution of gas, &c.*"§ One of the most recent writers on *Toxicology*, Dr. Galtier, states, in speaking of the effects of oil of vitriol, "Immediately after the ingestion of the poison the patient experiences a burning sensation," &c.|| As medical men are not likely to be present when this poison is taken or administered, except by mere accident, a judgment on the period required for the commencement of symptoms can only be formed from experiments on animals, or from the known local chemical action of this powerful

\* Treatise on Poisons, 4th Edition, p. 90.

† Guy's Hospital Reports, Oct. 1841, p. 291. ‡ Ibid p. 92.

§ "*Acides concentrés ou moyennement étendus introduits dans l'estomac. A peine ces acides ont ils été avalés, que l'on observe la plupart des symptômes suivants: chaleur brûlante a la bouche, dans l'œsophage et l'estomac, douleur vive, dégagement de gaz, &c.*"—*Traité de Toxicologie*, I. 83, 4ème Edition. 1843.

|| *Traité de Toxicologie*, I. 121, 1845.

substance. On the delicate structures of the mouth and fauces concentrated oil of vitriol produces an immediate effect, which, in my opinion, could not fail to attract the attention of, and excite alarm in, the mind of the most ignorant person. Some years ago I had occasion to administer common oil of vitriol to rabbits: there was obvious chemical action on contact, a violent struggle to avoid swallowing the acid (but no cry); there was evolution of gas from the mouth, and convulsive movements, followed by a swelling of the abdomen, in a period of time which appeared to be simultaneous with the contact of the acid with the living structures. Certainly not ten, nor even five seconds elapsed in any one of these experiments before effects were most obviously produced by the poison; and from what I have seen I should agree with the view expressed by Drs. Christison, Orfila, and Galtier, that violent symptoms, which can neither be concealed by the individual nor remain unobserved by the most indifferent or ignorant spectator, are produced by oil of vitriol in the very act of swallowing. The possible delay, therefore, is the time which it may require for a liquid to pass from the mouth into the fauces: and the local and violent chemical action of the acid would not allow it to remain long in the mouth without some obvious indication of its being there present.\*

On the supposition that the mother gave the poison by mistake, the following question might arise:—*Within what period of time will oil of vitriol, diluted with its bulk of water, begin to produce symptoms or effects likely to be observed by any bystander?* I do not know that medical jurists have performed any experiments on this subject. Orfila, however, supplies us with one observation in point. On the 4th of October 1835 a man swallowed a certain quantity of sul-

\* The strong mineral acids are well known to resemble each other in their rapid action on organic matter. Concentrated sulphuric acid as speedily chars as nitric acid oxidizes the living tissues. In the fifty-six cases of poisoning by nitric acid, collected by Tartra, I have not been able to find one instance in which there was any delay in the appearance of the symptoms. His general summary of the action of the acid is:—*Lorsq'une personne a avalé de l'acide nitrique, il survient aussitôt un ensemble de phénomènes, &c.*—*Traité de l'Empoisonnement par l'Acide Nitrique*, p. 141.

phuric acid diluted with its weight (*i. e.* with twice its bulk) of water, and experienced *immediately* the most severe suffering.\* Sulphuric acid, although by this partial dilution it may, to a certain extent, lose a portion of its corrosive properties, is nevertheless, I believe, strong enough to act chemically on contact on the fine mucous membrane of the mouth and fauces of a young infant, and therefore to produce some obvious effects. There is, however, another important circumstance which was altogether overlooked in the evidence for the prosecution, that when sulphuric acid and water are mixed together in equal or about equal proportions the mixture which becomes turbid from the precipitation of sulphate of lead, immediately acquires so high a temperature that a portion of the liquid is, as it is well known, evolved in visible vapour.

To those who are acquainted with the principles of chemistry, it might seem almost needless to dwell upon a fact so well known as this; but as it tends to shew that the mother could not have made the mistake alleged, I may state the results of some experiments made since the trial. One drachm of concentrated oil of vitriol was poured into a *cold* tea-cup, and one drachm of distilled water poured upon it. A hissing noise, as usual, immediately followed; and on placing a delicate thermometer in the mixture the temperature rose immediately to  $196^{\circ}$ , *i. e.* but little short of the temperature of *boiling water*! When two drachms of distilled water were poured in the same way upon one drachm of concentrated oil of vitriol, the thermometer, which had been previously cooled, immediately rose to  $160^{\circ}$ ! We shall presently have to consider what modifications in the results would be produced by the presence of a lump of sugar; in the meantime, we have here the evidence of an effect produced, obvious to the most ignorant person, and totally unlike that which would follow on the mixture of water with aniseed. It is true that the water employed by the mother was taken from the kettle, and was probably slightly warm: this, however, would rather have tended to elevate the temperature of the mixture, since there would be less loss of the chemical heat set free by the combination of sulphuric acid and water, in raising

\* Op. cit. I. 96.



the temperature of the water. This might have brought the mixture nearer to 200°, and have rendered it still more scalding. As it is not pretended that there was any delay in administering the supposed acid mixture, it follows, on this hypothesis, that the partially-diluted acid must have been given at a temperature certainly sufficient to injure the mouth and fauces of an infant, and thereby produce some very visible effects. It requires no reasoning to shew that there is no delay in the production of symptoms from the application of a liquid to the mouth at or near the boiling temperature; and, *à fortiori*, a hot liquid, formed of about equal parts of a corrosive acid and water, was not likely to have its operation delayed. This opinion is entirely in accordance with that expressed by Orfila. An acid moderately diluted ("*moyennement étendu*") would, under these circumstances, act with nearly the same, if not equal rapidity as that which was concentrated. It might not carbonize organic matter to the same degree as the concentrated acid, but that would not prevent an immediate effect from taking place. Passing from abstract considerations to the special facts of this case, the question then presents itself to us in this form—Is it possible that an infant of four months can receive by its mouth, and retain within its body for a period of thirty, or even ten seconds, without manifesting symptoms to create alarm, a mixture of equal parts of concentrated oil of vitriol and water, rapidly made and speedily administered? From a consideration of the chemical properties of such a liquid I am inclined to regard it as absolutely impossible; and I am not aware that any fact or reasoning can be adduced in favour of a contrary opinion.

Thus, then, the case is not substantially altered by the assumption that the mother gave, in mistake, sulphuric acid diluted with its bulk, or even twice its bulk of water. Admitting that she overlooked the high temperature of the liquid, some symptoms indicative of the mistake would certainly have been manifested by the child during the act of swallowing; for at least a teaspoonful and probably two teaspoonfuls of a mixture were given by the mother: and it appears to me quite certain, that, had this been the diluted acid, in less than five seconds she and her daughter must have been made aware of the serious mistake that had been made.

The importance of facts of this kind—*i.e.* whether symptoms occur *immediately* or *within a few minutes* after a liquid has been swallowed—cannot, of course, be known to non-professional persons; and the testimony of the two witnesses, that about four or five, and not less than *three* minutes had elapsed from the time the mixture was given by the mother, and the attention of her daughter was attracted to the infant in the pantry by a singular difficulty in its breathing, was not impeached. The fact appeared to have been stamped upon the daughter's mind by her having called to the prisoner not to hurt the baby; and then, if we are to believe the evidence, the child's mouth, for the first time, required wiping. Now, with these facts before us, if the mother gave the poison by mistake, it follows that about two teaspoonfuls of a mixture of oil of vitriol, diluted with its bulk of water, at a temperature above  $160^{\circ}$ , may be given to an infant of four months, and produce no visible symptoms to create alarm, or to give a suspicion of mistake, for a period, not of thirty seconds only, but of *two or three minutes*! Such an assumption is contrary to all medical experience, and has not a shadow of probability in its favour. Therefore, from this, a purely medical view of the question, if the evidence of the witnesses is to be believed, it is impossible that the mother could have administered the poison.

There are other medical facts whereby, as it appears to me, this inference may be strengthened; but a new medico-legal question first presents itself, namely, *Is it possible, from the local action on the mouth and fauces, to judge whether the acid was concentrated or diluted with its bulk of water?* In the absence of well-observed facts, it is difficult to return an answer to this question. The notion entertained by the counsel in defence, and put forward as an argument to the jury, was, that concentrated oil of vitriol *instantly dissolves off*, or corrodes and *detaches* the skin or membrane of the mouth and tongue. Therefore, as he found, from Mr. Tatham's evidence, that this membrane was not entirely destroyed (for there were only two or three spots of abrasion on the tongue, leaving a red fiery surface), he drew the inference that it could not have been strong, but diluted oil of vitriol which had been given to the child: hence, as the prisoner

had access to concentrated oil of vitriol only, she could not have been the party who administered it. In short, he argued that the effects produced were fully explained by the mother having, in mistake, given oil of vitriol, instead of aniseed, mixed with water. Mr. Tatham's evidence, however, did not warrant any such inference as this. His description perfectly coincides with the known chemical action of oil of vitriol in its most concentrated form. I need hardly observe to medical readers that the mucous membrane does not disappear *at once* by a process of solution under the use of the concentrated acid: it becomes, in the first instance, of a yellowish-white colour, softened, and then mechanically detached. The whole mucous membrane looked like "*soaked parchment*." Two abrasions of the tongue formed "a red fiery contrast." The chin had on it a light-yellowish or orange-coloured eschar. All of these are the well-known effects of concentrated oil of vitriol. It appears to me exceedingly doubtful, from experiments which will be presently related, whether they could be produced by vitriol diluted with its bulk of water. At any rate, there was nothing to justify the *medical* argument employed by counsel in defence, that the condition of the mouth and fauces proved that the vitriol must have been *diluted*. It was a complete mis-statement of medical facts.

In the report of the chemical analysis I have referred to the examination of a small part of the liquid vomited by the deceased about half an hour after the occurrence. It was a dark tarry liquid, almost black, identical with that which I have frequently had to examine where concentrated oil of vitriol has been taken. In short, the animal matter, consisting of blood, mucus, and mucous membrane, was *perfectly carbonized*, and from the sight of it, before hearing the circumstances, I immediately expressed an opinion that oil of vitriol must have been taken. I have never seen such an effect produced except by the concentrated acid. The disingenuous way in which medical facts are sometimes dealt with in courts of law will now be apparent. In the report of Mr. Tatham's evidence\* it will be seen that he was required by counsel in defence to perform an experiment in court, which

\* Note p. 417, ante.



consisted in adding to one part of sulphuric acid two parts of water, and mixing, whereby the carbonizing action of the acid was almost entirely destroyed. Sugar placed in this liquid produced but a very slight change of colour; and I subsequently ascertained that a piece of deal stick, immersed in it for some time, was not in the least degree changed in colour. Making use of this negative result for another purpose, he argued that this was the mixture that the mother might have given; an assumption entirely opposed to the nature of the matter vomited by the child shortly after its seizure. My belief is, that sulphuric acid so diluted would not have had the chemical power to produce a liquid of the description of that which I analyzed; therefore from this, among other facts, I am induced to draw the inference that the acid administered was in the concentrated state.

*Under what degree of dilution does concentrated sulphuric acid lose the property of carbonizing sugar and other kinds of organic matter?*—Certain medical circumstances, in addition to those already mentioned, favoured the view that the mother could not have given the poison by mistake. Setting aside the allegation that the mother tasted a part of the aniseed liquid which she gave to the deceased, that her daughter drained the cup, and Mr. Tatham some time after perceived the smell of aniseed in a cup, as entirely foreign to the medical evidence, there was still one fact of a chemical nature, which tended to prove that the mother could not have mistaken oil of vitriol for aniseed. *She added the liquid to a lump of sugar in a white cup, and then an equal quantity, or perhaps a little more water.* Now, in making such a mixture as this, there would not only be intense heat, but a considerable darkening of the liquid; a fact proved experimentally in court by Mr. Tatham. Sugar, it is well known, is most easily carbonized by strong sulphuric acid; and it may be as well to state here, that Mr. Phillips has found that 1-100th of a grain of sugar is sufficient to discolour a fluid ounce of sulphuric acid, even without the application of heat. If the quantity of sugar be moderately large, the discoloration is very great, amounting to blackening, and takes place with great rapidity. When the experiment was performed in court, at the request of the counsel for the defence, in an *inverse*, and therefore in an entirely irre-

*levant manner*, there was scarcely any change of colour, for a reason which every chemist will at once perceive. By putting the *water* first, and *mixing* it with the acid, the latter becomes saturated with water, and hence it has no tendency to decompose the sugar, or cause a blackening of the liquid. The results of the following experiments, performed subsequently to the trial, tend to confirm the opinion expressed by Mr. Tatham on this subject:—

1. On putting a lump of sugar into one drachm of concentrated sulphuric acid in a white cup, it speedily acquired a yellowish colour wherever it was wetted by the acid. On adding *one drachm* of water, and mixing, the whole liquid became black, frothy, evolved vapour, and, a thermometer plunged into it, indicated a temperature of  $180^{\circ}$ . A common piece of deal stick was not carbonized in this mixture, but it had merely a greenish-yellow colour when washed from the loosely adhering carbon of the sugar.

If the same proportions of acid and water be *mixed together before* the addition of the sugar, a piece of deal stick is scarcely affected; and when sugar is added, it is only after two or three minutes that the mixture acquires at first a yellowish, and then a reddish-brown colour, but no carbon is set free. The mixture has a temperature of  $196^{\circ}$ .

2. In this case *two drachms* of water were added to the acid in which the lump of sugar had been placed. The sugar became first yellow, then black, and, on gently shaking, the whole mixture became black, and acquired a temperature, in one experiment of  $164^{\circ}$ , and in another of  $160^{\circ}$ . A piece of stick plunged into this mixture was neither corroded nor carbonized.

The same proportions of acid and water were previously mixed, and sugar then added. There was scarcely any perceptible change of colour for several minutes, but the sugar dissolved in the mixture (diluted sulphuric acid) which had a temperature of  $160^{\circ}$ . In the course of an hour it had acquired a reddish-brown colour. This was the experiment which the counsel in defence caused Mr. Tatham to perform; but, as it has been already observed, it had no relation to the question, as, on the assumption of a mistake by the mother, the sugar and vitriol were mixed, in one room, *before* the water, which was in another, was added; whereas the learned

counsel, with no other apparent object than that of bewildering the jury, required the water and acid to be well mixed, and the sugar added *afterwards*: he also requested that *twice* as much water might be used as was employed by the mother! This misapplication of chemical evidence was allowed by the court to pass without note or comment; and in his charge the learned judge drew an inference from the failure of an experiment which had no application whatever to the facts sworn to in evidence.

Although, as the water and aniseed were in different apartments, it is not likely that there should have been any mistake in the *order* in which they were mixed, it was considered advisable to perform the following experiments:—

3. One drachm of sulphuric acid was placed in a white cup, and two drachms of water added. A small lump of sugar was then dropped into the mixture. In a few seconds, the sugar became blackened; and, on shaking the mixture, the whole formed a deep black liquid, at a temperature of 160°.

4. Two drachms of water were placed in a cup, and one drachm of sulphuric acid added. The acid fell through the water, and, on putting into the liquid a small lump of sugar, this was darkened in a few seconds, and gave, when shaken, a greenish-black colour to the whole of the liquid, which had a temperature as high as in No. 3.\*

Thus, then, it will be seen, that even by putting acid and water, or water and acid, before the sugar, the results are sufficiently striking. It is only when the acid and water are thoroughly intermixed before the addition of sugar, that the liquid does not become blackened; but there is no pretence for asserting, and it would have been contrary to the sworn evidence to have assumed, that the aniseed and water were first mixed together, and well stirred or shaken, before the lump of sugar was added: yet all this must have been assumed to justify the supposition of a mistake.

As the exact quantity of water used by Mrs. Barker was a little uncertain, some additional experiments were performed:—

\* The result of this experiment will of course depend upon the degree with which the acid mixes with the water in falling through it.



5. When *three drachms* of water were added to one drachm of sulphuric acid, in which a lump of sugar was immersed, the liquid immediately darkened around the sugar, and the whole speedily acquired a blackish-green colour. The temperature was 156°.

6. When *four drachms* of water were added to one drachm of oil of vitriol, in which a lump of sugar was immersed, black streaks speedily began to appear around the sugar. On slight agitation, the whole mixture acquired a greenish-black colour, and the temperature was 142°. In the two last cases, a stick plunged in the mixtures was neither corroded nor carbonized in any degree.

Thus, then, with twice, and even three times the quantity of water alleged to have been employed by Mrs. Barker, such marked effects would have followed, in change of temperature and colour, as to have rendered a mistake impossible.

The perversion of chemical evidence here was not a little remarkable; but this irrelevant fact probably had its influence with the jury, and they were led away with the false impression, that whether oil of vitriol, or a colourless aniseed mixture, had been used in this instance, there would have been no difference in the appearance of the liquid on mixture! As the mother observed no change whatever in the mixture, but that it preserved its usual appearance, even if her statement that she tasted it were rejected, there would be, from the above facts, strong chemical proof that the mistake suggested by counsel could not possibly have been made.\*

\* A very erroneous *ex parte* statement, in reference to this subject, has been lately published in a medical periodical, communicated by Mr. J. J. Harrington, attorney for the prisoner. Although it had been distinctly sworn on the trial by a witness (Mrs. Barker) who could not have known the importance, in a chemical point of view, of her answers, that the sugar and liquid (whether aniseed or vitriol) had been mixed *before* water was added, the writer assumes that the water and aniseed were most thoroughly intermixed (without thorough intermixture the liquid is invariably blackened, see experiments 3 and 4) before the addition of sugar; and contends, from his own experiments, that the medical opinion given by Mr. Tatham, which, as it will be seen, was based upon *sworn evidence*, and not on any assumption of his own, was erroneous. It is only fair to suppose that Mr. Harrington could not have known that the results, arising from the mixture of vitriol, sugar, and water, depend materially on the *order* in which the substances are mixed: for there is no apparent reason why he should have suppressed a fact so important, and so necessary to

The counsel in defence alleged that the spots on the dress of the mother could not have been caused by any liquid vomited by the child, as magnesia had been given to it; and I had admitted that magnesia had been found in the stomach combined with the acid. It is true that a small portion of the sulphate of magnesia was met with, but the greater part

the formation of an opinion as to the truth or error of the chemical testimony. As it is, the reader is left to conjecture how, and in what way, the witness (Mrs. Barker) had mixed the ingredients alleged to be poisonous. The fact that the contents of the stomach were completely charred to a tarry liquid, renders it almost unnecessary to discuss the question, whether the liquid swallowed by the child would, or would not, carbonize sugar; since, according to my experiments, which are only confirmatory of those of other chemists, sulphuric acid, which is so diluted as not to carbonize sugar, will certainly not char blood, mucus, or mucous membrane. Nevertheless, as it will be seen by the mode in which the learned counsel dealt with Mr. Tatham's evidence, this, which I believe to be a chemical impossibility, was forced upon the jury as a truth—"There was no *change of colour*, as they the jury had seen. Therefore, the mistake might have been made by Mrs. Barker!"

Mr. Harrington goes so far as to assert, in the Paper referred to, that the innocence or guilt—indeed the hanging of the accused—depended on the simple fact, whether sugar would, or would not, be carbonized under the circumstances. If this view be correct, and if there be any faith in chemical experiments, repeatedly performed, he has unintentionally, but conclusively, proved that the accused was guilty; for when the ingredients are put together in the order and proportions sworn to, the mixture becomes invariably blackened, whether the acid, sugar, or water, be added first; always provided the acid and the water be not in the first instance well shaken and mixed. If, however, an individual be permitted to assume that the three substances were mixed in an order different to that repeatedly sworn to, and to draw an inference from this assumption contrary to the evidence adduced, it would be better to assume at once that no sugar was used. It appears to me, that we are bound to take the experiment according to the evidence, when there cannot be the slightest suspicion of fabrication, or to reject it altogether. We have no right to twist facts of this kind to suit our own particular views. Mr. Harrington cites this as a case shewing with what caution what he calls "speculative" chemical testimony ought to be received in Courts of Law; but the result of this investigation appears to me to shew that a Court should exercise the greatest caution in not allowing itself to be imposed upon by chemical experiments entirely at variance with the facts proved. Let us suppose that it had been given in evidence that the liquid (aniseed or vitriol) had been well mixed with water before the sugar was added,—Would a medical witness have been permitted to express an opinion unfavourable to the prisoner from results obtained by an *inverse mode* of performing the experiment? Assuredly not. Yet, what would have been denounced as a gross deception in *medical* evidence, was received without comment as *legal* evidence in favour of the accused.

of the acid was not neutralized; and, when brought to me, the vomited liquid, as I stated in evidence, still retained the property of acting powerfully on vegetable colours. Therefore, chemically speaking, the stains on the dress might have been caused in the way stated by the mother.

The counsel further asserted, that if aniseed had been really given I ought to have found some portion of it in the matter vomited by the child, either by the smell or otherwise. He employed this argument, however, without having put any question as to why some traces of aniseed had not been found; and there was no doubt that it had great weight with the jury, for the judge pointedly called their attention to it. I need hardly say, that a teaspoonful of diluted aniseed mixture, followed shortly after by a dose of oil of vitriol, would not be likely to leave any trace of its presence, by smell or otherwise, in the midst of decomposed blood and mucus vomited *half an hour* afterwards. Mr. Tatham did not receive this liquid until about an hour and a half after it had been vomited. *Twenty hours* had elapsed before it was placed in my hands. It was then in a small basin but loosely covered, and it had that peculiar odour which is produced by vitriol in carbonizing organic matter, quite sufficient to conceal any feeble traces of the odour of aniseed not removed by decomposition, absorption, or evaporation.\* These facts could have been stated to the court, but they formed no part of the examination; and, medically speaking, the erroneous inference was drawn from them that the mother had not given aniseed but oil of vitriol by mistake. It was strongly insisted that had this mistake not been made some of the aniseed would have certainly been detected in the matter vomited from the stomach. The counsel was permitted by the court, to make this one strong ground for the rejection of the evidence of the mother!†

\* Subsequently to the trial I mixed one drachm of oil of vitriol with a dose of the aniseed similar to that which was given to the child. In two minutes the smell was in a great part destroyed, and a chemist, not aware of the nature of the experiment, could perceive no odour of any essential oil. The presence of a small quantity of sugar tends still more rapidly to conceal any odour that may remain. A professional man will perceive that the discovery of aniseed, under the circumstances, would have been next to an impossibility.

† The quantity of essential oil in a teaspoonful of the diluted mixture was



There is only one medical statement in the charge of the judge which calls for notice. His lordship considered, that as oil of vitriol was a substance admitted to produce intense pain, if it had been given in the pantry by the prisoner it is probable that the child would have cried out instead of making merely a wheezing noise. With all deference to his lordship, the crying out, under the circumstances, must be a mere accident. The medical evidence establishes it as an undoubted fact that oil of vitriol must have been administered to the deceased either in the kitchen or the pantry, and within a period of five minutes; but there was no evidence to shew that it uttered a cry in either situation, although it must have taken the vitriol. Besides, the noise produced by a child whose mouth and fauces were filled with oil of vitriol would partake more of a gurgling in the breathing than of a loud and distinct cry; for the parts about the throat and fauces resist, as much as possible, the action of the acid. In poisoning animals I have never observed that they uttered a cry.

I have confined these remarks, as much as possible, to the medical facts, or to those circumstances which could only be understood and explained by the aid of medical evidence. They appear to me to shew that the poison could not have been administered by the mother—

1. Because it was proved in evidence that some minutes elapsed before symptoms of poisoning appeared; and they were not likely to be delayed whether the acid was concentrated or diluted to the degree supposed.
2. That from the appearance of the mouth and fauces, and the condition of the liquid first vomited, it is in the highest degree probable that oil of vitriol had been given in a concentrated state.
3. That the effects produced by mixing aniseed water with sugar, or oil of vitriol with sugar, with the subsequent addition of water, are so widely different, that they could not fail to attract the attention of the most ignorant

certainly not more than from the fourth to the sixth part of a drop! Yet, according to forensic chemistry, this fractional quantity should have been detected by its odour, after it had become mixed up with oil of vitriol, carbonized blood, and mucus, and after having been exposed in a basin for twenty hours!

person; but especially of one who had been in the habit of giving aniseed mixture.

The principal circumstances against the prisoner were, that she had the child in her custody at the time the medical facts shew that the symptoms must have commenced; that there was concentrated oil of vitriol in a bottle labelled "Poison" in the room where she was alone with the child; that she had fetched the vitriol that morning for a lawful purpose, had spoken of its deadly properties, and had been ordered by her mistress to put it in a safe place. If the evidence was to be believed, the symptoms must have begun while the prisoner was in the room where the vitriol was kept; and the symptoms from oil of vitriol begin, as we have seen, *in the very act of swallowing*. On the other hand, the circumstances in her favour were, that there was no discoverable motive on her part; that she had been kind to the child, and manifested great anxiety respecting it during its illness; but these were of course matters for the consideration of the jury. The evidence that she had administered the poison did not satisfy them, and they returned a verdict of *Not guilty*.

On the hypothesis that the vitriol had been given by the prisoner, it must be assumed that it was given out of the bottle, as no glass or vessel or spoon, so far as I know, was discovered out of which it could have been administered by her. This being the case, the probability is that some of the acid would have been spilt on her own dress and that of the child. In the remarkable case of Mrs. Humphreys, the administration was, in fact, brought home to her by a stain of sulphuric acid being found on her night-dress. Neither the dress of the prisoner nor of the child was forwarded to me for examination. The result of an analysis might have been strongly in her favour or against her.\*

\* In criminal cases of poisoning by the mineral acids, it would be advisable for the medical witness to see that the dresses of all the persons present are examined, and, if necessary, taken charge of by the legal authorities. A medical man need not make himself officious on such occasions; but he would be sadly unmindful of his duty if he did not aid the course of justice by extending his scientific knowledge to the detection of crime. It is much to the credit of our profession that the crime of murder by poisoning—a form of death from which no caution or foresight can protect an individual—is so frequently

It is one of the great privileges of medico-legal science to defend the innocent, and to shew when a charge has been unjustly made. If, in a trial for poisoning, it cannot be proved who really administered the poison, it may be in our power to shew that a particular person could not have administered it, from medical circumstances, wholly irrespective of those upon which a jury may base their decision. In a court of law, fact is one thing, *proof of a fact* another. The report of this trial is well calculated to shew how medical facts of the greatest importance may be misunderstood and lead to incorrect inferences: nor is it easy to suggest a remedy for an evil of this kind. On this occasion an attempt was made to extricate the prisoner by throwing the charge of poisoning on the mother. A *medical* analysis of the evidence, must, I think, satisfy the reader, that, whether the prisoner was morally innocent or guilty, there was nothing to justify so serious an imputation against a respectable female as that of charging her with the destruction of her own child, and wilfully conspiring with a young girl, her daughter, to fix the heinous crime of murder upon an innocent maid-servant. If I have succeeded in this, my object will have been attained.

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### CASE OF PROFUSE SALIVATION,

FOLLOWING THE USE OF SMALL DOSES OF CALOMEL IN NEPHRITIS,  
WITH REMARKS.

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IN December 1845 a case of some importance was referred to me by the magistrates of Reading, under the following circumstances:—A man, labouring under disease of the kidneys, had placed himself in the hands of a person, who promised to cure him. Part of the treatment consisted in the administration of small doses of calomel. Profuse salivation came on, and the patient, not finding himself relieved, applied to a regular medical practitioner. In about a fortnight afterwards he died, and a coroner's inquest was held, in order to determine

brought to light by the announcement of suspicious facts of a medical nature to coroners and magistrates; and on several occasions I have heard the highest compliments passed by judges on medical practitioners who have been thus indirectly the means of bringing an atrocious criminal to the bar of justice.



whether his death had not arisen from improper treatment on the part of the unlicensed practitioner.

Some of the medicines supplied to the deceased by the inculpated party were brought to me for chemical examination, and the following report of the results was made:

*Report on the Analysis of certain Pills and Powders delivered to me by Mr. Boulton, Superintendent of Police, December 5th, 1845.*

THE PILLS.

1. Seven in number, of a greenish colour, and of very unequal size and weight.

One weighed . . . . .	3·5 grains
A second . . . . .	3·3 ..
Average weight of 4 (11·6 gr.) . . . .	=2·9 ..
Making a difference of 0·6 grains.	

2. Digested in water a quantity of green insoluble matter was separated, like broken leaves, under the microscope (*digitalis*?). The watery solution contained no soluble preparation of mercury, nor any noxious mineral ingredient.

3. One pill cut into halves, and examined by a strong lens, gave no indication of the presence of metallic mercury. When a portion was rubbed on bright copper, with muriatic acid, there was produced a bright silvery stain, indicative of mercury, inferred to be owing to calomel.

4. Four of the pills weighing (11·6 grains) were decomposed by nitro-muriatic acid, the liquid evaporated to dryness, and again digested in the acid. The dried residue was dissolved in water, and the solution precipitated by chloride of tin. By this means 2·6 grains of metallic mercury were obtained: making allowance for some loss, this is equal to 3·05 grains of calomel, or, on an average, of 0·76 grains to each pill. In this, I am rather over than under-estimating the quantity of calomel.

5. An experiment was then performed with one pill, which weighed 3·3 grains. By a similar process, this gave only 0·5 grain of mercury=0·587 grain of calomel, *i.e.* rather less than six-tenths of a grain in this single pill. (Specimen produced.)

6. As a corroborative experiment one grain of calomel was weighed out, and treated in a similar way to the pills. It

yielded 0·8 grain of metallic mercury=0·94 grain of calomel; *i.e.* a loss of six-hundredths of a grain. (Specimen produced).

7. The great bulk of the pills—*i.e.* from  $2\frac{1}{4}$  to  $2\frac{3}{4}$  grains—was made up of green vegetable powdered leaves, (*digitalis*?) and some organic matter (*conserve*) for mixing the materials together.

From the above results I infer:—

1. That the pills contained calomel as the only mineral ingredient.

2. That they had not been made with proper care; the pills differing as much as 0·6 grain in weight from each other, and the calomel being in the proportion of  $\frac{3}{4}$  of a grain on the average of four pills; while it was found to be about *six-tenths* of a grain in one of the heaviest pills.

3. That, making every allowance for loss, and the great difficulty of separating mercury when mixed up with vegetable matter in such small quantities, I infer, that in not one of the pills delivered to me was the quantity of calomel greater than  $\frac{1}{4}$  of a grain for each pill.

4. That there are no tests by which the nature of the green vegetable matter, forming the bulk of the pill, can be determined. It appears like the leaves of *digitalis* powdered.

#### THE POWDERS.

1. Seven in number; white, fixed when heated. Weight—

Of one . . . . .	60·3
Of a second . . . . .	59·5
Of a third . . . . .	60·

Evidently intended for powders of a drachm weight.

2. Very soluble in cold and hot water; entirely dissolved on boiling; a small semi-crystalline sediment dissolving with more difficulty than the bulk of the powder.

3. With acids a strong effervescence (carbonic acid), entirely soluble.

4. Cold aqueous solution, *alkaline*, precipitated yellowish white by nitrate of silver. Not precipitated until boiled by sulphate of magnesia. The nitric-acid solution, evaporated, left rhombic crystalline plates; and these burnt with a bright yellow colour in the flame of alcohol. The aqueous solution was not precipitated by chlor. platina or tartaric acid.

5. A whole powder was dissolved in diluted nitric acid, then concentrated. The acid solution was very feebly precipitated by nitrate of barytes (a *small* portion only of powder thus treated was not precipitated).

6. When treated with a current of sulphuretted hydrogen gas, and hydro-sulphuret of ammonia, the powder, as well as its solution, underwent no change.

8. On digesting a whole powder in alcohol, by the aid of heat, nothing was dissolved after several hours.

From these results I infer that the powders consisted almost entirely of bicarbonate of soda, with traces of sulphate, and that they contained no noxious ingredient whatever; at least in any quantity discoverable by chemical analysis.

ALFRED S. TAYLOR, F.R.S.

*Lecturer on Medical Jurisprudence*

*and Chemistry in Guy's Hospital.*

*December 9th, 1845.*

Mr Vines has been kind enough to furnish me with the following particulars of the case, so far as it fell under his observation, and this report embraces, in substance, the evidence which he gave before the coroner:—

On the 14th of November last (1845), J. W——, aged 37, gas labourer, came under my care, having been attended the two previous days by my assistant. His symptoms were as follows:—Countenance anxious; saliva running in considerable quantities from his mouth; tongue swollen, and coated with a white fur; gums ulcerated, and bleeding at intervals; mucous membrane of throat and fauces red and swollen; skin hot; pulse quick; strong mercurial fœtor of breath; the bowels relaxed: nausea and vomiting were also complained of. From the history given by the man, it appeared that he had been suffering from pain in the back and bowels, with scanty and bloody urine, for which he had sought the advice of a doctor, an unlicensed practitioner, who had been located for a short time in the town; that he had given him a plaster for his back, and prescribed a pill to be taken three times and a powder five times a day. After taking these medicines for five days the mouth became extremely sore. He was then told to discontinue the pills, and other medicines were substituted; but the salivation increasing,



and the man not being able to leave home, my attendance was requested.

The details of the case, whilst under my care, are briefly comprised in the following :

14th. Condition of the patient being precisely as described on the 12th.—To take liq. potass. gtt. x. acid hydrocyani gtt. i. mist. camph.  $\frac{3}{4}$ ss. hor. 4tis. To use an astringent gargle of inf. of roses, alum, and myrrh. To take beef-tea, arrow-root, and gruel.

15th. Sickness somewhat abated, but the ptyalism and diarrhoea continue.—To take a cretaceous mixture. Continue the astringent gargle and nourishment as before.

20th. Some tenderness of the bowels, with constipation. Salivary discharge diminished, but the mouth still very sore.—To gargle frequently with warm water : discontinue the mixture. Take half an ounce of castor-oil directly, which was rejected. An enema of thin gruel.

21st. Bowels opened ; considerable prostration of strength with slight tenderness of bowels ; occasional wandering of mind ; urine passed in tolerable quantities.—Apply warm water to the abdomen. A saline mixture, with tinct. of henbane ; port wine and water.

22d. Passed a restless night ; countenance anxious ; pulse feeble ; bowels confined ; urine scanty, and rather high coloured.—Castor-oil ; as much beef-tea and light nourishment as possible. Continue the port wine and water. An injection was ordered.

23d. Slight tenderness of epigastrium and bowels, particularly in the right iliac region ; occasional sickness ; bowels open ; urine free ; fits of delirium, with coma in the intervals ; twitchings of the upper extremities ; tongue coated with a brownish fur ; gums still ulcerated, and bleeding at intervals.—Apply a blister to the nape of the neck. Continue the medicine and nourishment as before.

24th. Great prostration and sinking of the vital powers, calling out loudly at times, and then falling into a state of coma ; water passed during the night of a natural colour.—Bottles of hot water to the feet. Brandy and water to be taken occasionally.

25th. Died at two o'clock this morning.

The following evidence came out at the adjourned inquest :

The deceased, John Wilkins, who had been employed at the Reading Gas-works, became indisposed in the early part of the month of November, and sought the advice of Mr. Harrinson, surgeon, of Castle Street, and continued under his care about a fortnight. Wilkins, not finding himself relieved from the medical treatment he had undergone, went, on the 7th of November, to a Mr. Lamb, who, after interrogating him as to the nature of the complaint, gave him some powders and pills, the latter of which contained a certain amount of calomel. Directions were given in writing by Mr. Lamb to the deceased to take *half a pill three times a day*, but his wife, being unable to read, administered the medicine in double doses, and in a few days salivation was produced. He was five days under the care of Mr. Lamb, and on the 12th of November an order (on application to Mr. West, the relieving officer,) was given for the attendance of Mr. Vines, surgeon for one of the districts of the Union, who visited him until the time of his death, the 25th of November.

The widow of the deceased was questioned respecting the directions given by the prisoner with the medicines which he prescribed for her husband. She at first said that no directions had been given ; but a written paper was produced, in which it was plainly stated that *half-a-pill* was to be taken three times a-day.\*

[Admitting that the ingredients were well mixed, this would be equivalent, according to the analysis, to *three-eighths* of a grain of calomel at each dose ; making, therefore, a grain and an eighth per diem.]

From the evidence of this witness, it appeared that the deceased began to take the pills on Friday the 7th of November, and continued to take them until he was placed under the care of Mr Vines's assistant on the 12th ; *i.e.* five days. Had the written order been followed, he would thus have taken rather less than *six grains* of calomel during this period, but, in consequence of the mistake made by the widow, he took *eleven*

\* The following is a copy of the written directions left by Mr. Lamb with Mrs. Williams :—"One powder to be taken five times a day, and half a pill three times a day. Put half a pint of warm water on gum aralic and stir till all is dissolved."

*grains and a quarter.* The pills were unequal in weight and composition; consequently, a larger dose of calomel than is here supposed may have been taken; but, so far as the chemical analysis will allow us to judge, it is fair to presume that this was the extreme dose—i.e. *two grains and a quarter daily* for five days. In favour of the prisoner, it was further elicited that when he was informed of profuse salivation having arisen from the use of the pills, he desired the deceased to discontinue them. The widow admitted that her husband had told her this; but still the order does not appear to have been obeyed.

Mr. Taylor then described the composition of the pills and powders. In reply to questions by the coroner, he stated that the effect of mercury would depend a great deal on the previous condition of the person taking it; some were much more susceptible than others. The quantity prescribed was not an extraordinary one; and, in order to give an opinion respecting its probable effect on the deceased, he must first know whether the symptoms of salivation were continued down to the period of death, as well as the effects produced by this salivation on the system. In his opinion, the quantity directed to be taken in the paper left with the deceased would not materially injure a man in an ordinary state. Of course, if double the quantity was taken, the consequences would be more severely felt. He would rather decline answering the question as to whether the use of mercury was improper in such a disease; but as the result of his own observation, rather than from actual experience, he should say that in granular disease of the kidneys it was better to avoid the use of mercury. These medicines are commonly given in dropsies in the doses here stated (referring to the directions given by Mr. Lamb to the deceased).

Mr. Weedon, for the prisoner, then inquired if the symptoms described as the result of taking mercury would continue at the end of twenty or thirty days; and, in order to place the matter clearly before the witness, he briefly related the circumstances of the case. On the Friday, Wilkins went to Mr. Lamb, and continued under his treatment until the following Tuesday, taking the pills and powders. On that day he went to Lamb, and on complaining that his mouth was sore, the pills were discontinued and other medicines were ordered. On the Wednesday (the day following) Wilkins went to Mr. West, at the work-



house, and there obtained an order for medical attendance, directed to Mr. Vines, who from that time attended him until his death on the 28th. The question put by Mr. Weedon, after the above explanation, was, whether death could be positively ascribed to the treatment which Wilkins had received from Mr. Lamb so long before that took place, the former having taken  $2\frac{1}{4}$  grains of calomel per diem, instead of half that quantity, as specified in the written directions left with Mrs. Wilkins by Mr. Lamb.

Mr. Taylor replied, that in order to answer the question correctly, he must know whether the symptoms of salivation had progressively increased, or whether there had been a cessation of them; and this had not been stated in the account he had heard. He should think it was impossible to say, with positive certainty, that death would be caused by taking the small quantity of calomel prescribed by the prisoner; but unless he knew what the symptoms were he could not give a positive answer to the question. The effect of mercury varied greatly in different persons. In some peculiar habits and states of body small doses sometimes produced the most violent effects. The quantity ordered to be taken in this case would not injuriously affect any man in an ordinary state.

Mr. Weedon—Is the use of mercury improper in disease of the kidneys?

Mr. Taylor—There is great difference of opinion among medical men as to the use of mercury in that disease. I should not myself recommend it.

The witness was then asked whether the use of small doses of calomel was not recommended in cases of diseased kidneys by Dr. Williams, Professor of Medicine in University College; to which he replied that he was not acquainted with Dr. Williams's practice in such cases. A published lecture of Dr. Williams's was then produced, in which the use of calomel was advised.

By the Coroner—Should you consider it as an instance of gross ignorance or criminal carelessness on the part of a person administering mercury for disease of the kidneys?

Mr. Taylor—No; not so far as I can judge from the account I have heard to-day of this case.

Mr. Weedon—Was Mr. Lamb's treatment judicious in order-

ing the mercury to be discontinued when Wilkins applied to him on Tuesday?

Mr. Taylor—Yes, after salivation had set in.

By the Foreman—Ought not the patient to be cautioned against taking cold while he is under a course of mercury?

Mr. Taylor—Certainly; a medical man ought to caution a patient who is taking frequent doses of mercury; but there are, no doubt, medical men who might accidentally omit doing so.

By a Juror—There is no doubt that if the deceased went out to his work at two o'clock in the morning, while under the mercurial treatment, the medicine was more likely to be attended with injurious effects. The dose prescribed was not such an one as is calculated to be injurious to a man in an ordinary state of health.

Mr Harrinson, who, with Mr Vines, made a careful post-mortem examination of the body 130 hours after death, then gave the following account of the appearances met with in the body:—

External configuration moderately muscular; incipient green discolouration of integuments of chest, abdomen, and back.

*Head.*—On reflecting the scalp, the pericranium was seen drier and paler than usual; skull of normal thickness; vessels of membranes congested posteriorly, the latter not readily separated; arachnoid slightly opaque, and of unusual dryness; consistence of substance moderately firm; on slicing, fewer red points than usual; no fluid in the ventricles; plexus choroides pale and empty. On a minute examination of the rest of the brain nothing abnormal was discovered.

[*Remarks.*—When I first saw him, October 17, he was a remarkably fine, healthy-looking, muscular man. The discolouration of the integuments, dryness, &c. of the pericranium, congestion of membranes, their close adhesion and opacity, absence of fluid in the ventricles, and flaccidity of the plexus choroides, &c. were, undoubtedly, post-mortem appearances. The fluid (of which most probably there had been a considerable quantity) had been absorbed by the hygidmetric property of the brain, which it possesses in a high degree.]

*Mouth, Throat, &c.*—Gums swelled, livid, ulcerated at the base of each tooth to a considerable depth, in both upper and lower jaws; tongue enlarged, covered with a brown deep

deposit of thick tenacious mucus and sordes: extending, more or less, to the cheeks, palate, and pharynx; the mucous membrane covering the posterior part of the larynx (in the cavity of the pharynx) was highly injected, red, and swollen; the larynx and trachea were filled with a viscid, thick, reddish-brown fluid, on the removal of which a tough false membrane was seen lining the whole of the trachea. On removing this membrane, the mucous tissue was redder and more turgid than normal; the thick fluid filled also the bronchi, and more or less the larger bronchiæ; œsophagus healthy.

*Remarks.*—The gums shewed evident proofs of the ulcerative process; the mucous membrane of the tongue, mouth, pharynx, &c., of intense irritation. This had obtained such a degree in the trachea as to produce the effusion of lymph and the formation of a membrane. That this membrane was something more than inspissated mucus was seen by throwing it into water, agitating it briskly, after which it still preserved its integrity.\* The swollen state of the mucous membrane at the back of the larynx undoubtedly arose from a participation in the same action. The viscid, red, thick fluid filling the passages was accumulated in the act of dying, from the mode of death.

*Lungs.*—Remarkably spongy and large; no deposit; no adhesions; they were dark externally, and the lower lobes much congested; there were five ounces of bloody fluid in each pleural cavity.

[*Remarks.*—The dark appearance of the lungs and congestion of the lower lobes were evidently post-mortem changes, and the result of the mode of death, that of coma; as also the pleural effusion.]

*Heart.*—Of moderate size; no disease of valves; right side filled with dark blood; left empty; about one drachm of bloody fluid in the pericardium.

*Abdomen.*—Peritoneum, intestines, &c., externally presented no marks of disease; liver healthy, of natural size; gall-bladder distended with green bile. Nothing abnormal was discovered in the whole tract from the stomach to the rectum, except a little redness, fulness, and softness of the mucous membrane in the last six inches of the ileum.

\* Does inflammation, excited by the over-action of mercury, run on to the production of false membrane? I. H.



*Kidneys*.—Left much enlarged, double its natural size; externally smooth, of a deep purple colour: on making a section, much firmer than natural; the cortical and tubular portions palpably distinct; the cortical mottled, the tubular of a dark red, and much indurated; little blood escaped on its division. Right less in size, and morbid changes less distinctly marked; ureters normal. *Bladder* healthy; contained about three-fourths of a pint of urine, of a deep straw colour. On exposing this to heat, in an iron spoon, it became milky, with little deposit.

[*Remarks*.—The distended gall-bladder and redness of the ileum might be caused by mercury. The kidneys were undoubtedly in a state of sub-acute inflammation. Their size, colour externally, appearance on division, mottled cortical portion (from infiltration of lymph), dark red induration of tubular portion, &c., all indicated the changes that had occurred.]

*Note by Mr Harrinson*.—The great question at the first sitting of the inquest was, whether mercury was a proper or an improper medicine in disease of the kidney. I gave it as my opinion that it was *decidedly improper*. My opinion was founded on two cases that had very recently occurred to me. A woman, labouring under Bright's disease, rubbed into her side about *one drachm* of strong mercurial ointment; profuse salivation and exfoliation of the jaw followed. The other case occurred to Dr. Cowan. He gave *two grains* of the hyd.  $\bar{c}$ . cretâ to a woman with atrophy of the kidneys: the most intense salivation was produced.

Mr. Harrinson deposed that from what he found he did not consider that there was sufficient in any of the morbid appearances to account for death.

The coroner, Mr. Blandy, in addressing the jury, said he felt it to be his duty to tell them that it was of no consequence to that inquiry whether the party, who had been so much the subject of observation, was a licensed or unlicensed practitioner; for it had been laid down, by some of the first judges, that death, resulting from any gross ignorance or inattention on the part of the medical attendant, was an offence punishable by law. The question, then, for their consideration was, What was the cause of death? and whether the medicine administered to the deceased, was of such a nature as the person so administering it could be guilty of a criminal offence? The

coroner cited the case of "*Rex v. John St. John Long*," tried in the Central Criminal Court, before Justice Parke, in which the learned judge said to the jury, "On the one hand we must be careful and most anxious to prevent people from tampering in physic, so as to trifle with the lives of men; and on the other hand, we must take care not to charge criminally a person who is of general skill, because he has been unfortunate in a particular case. It is God that gives—man only administers medicines; and medicine that the most skilful may administer may not be productive of the expected effect: but it would be a most dreadful thing if a man were to be called in question, criminally, whenever he happens to miscarry in his practice. These are things for your consideration when you are considering whether a man is acting wickedly; for I call it acting wickedly, when a man is grossly ignorant and yet affects to cure people; or when he is grossly inattentive to their safety." The coroner next cited the case of "*Rex v. Van Butchell*," tried before the late Baron Hullock, who stated "that it made no difference whether the party be a regular or irregular surgeon; indeed, in remote parts of the country, many persons would be left to die if irregular persons were not allowed to practice. There is no doubt that there may be cases where both regular and irregular persons might be liable to an indictment." The only evidence to which he should call their attention was that of the widow of the deceased. Whether, from the circumstances under which she was labouring, or any other cause, he knew not, but her memory appeared to be very defective. The variations in her statements were many, and grievous, in several respects; more particularly in that part as to the time of the first administration of the medicine, and the paper of directions which had been referred to. Before the magistrates she stated that her husband received no written directions from Mr. Lamb as to how the medicine was to be taken; and that paper being now produced she perfectly recollected its having been given to him at the time of receiving the pills and powders. It would be unsafe to assume, from such evidence, that Mr. Lamb had neglected to do what appeared to be his bounden duty in such a case. If they were of opinion that due caution had not been given to the deceased by Mr. Lamb, in prescribing the mercurial medicine, which he (the coroner) had no hesitation in

saying was his duty to have done, then it would be for them to return a verdict of manslaughter; but he thought that that must rest entirely on the evidence of the widow, whose memory, on some other very material points, had proved so defective, that it would be hardly safe for them to come to such a conclusion: that, however, was a matter solely for their consideration. Whether calomel was or was not a proper medicine for disease of the kidneys they had nothing to do with, for that was even now a *vexata quæstio* among gentlemen of the medical profession. The evidence of Mr. Harrinson went to shew that deceased had died from natural causes; and, after weighing well the statements of the several parties, it would be for them to consider whether the deceased did or did not die from the improper administration of mercury.

The jury then retired, and, after three quarters of an hour's deliberation, returned a verdict that "John Wilkins died from natural causes, of disease of the kidneys." On dismissing the jury, the coroner expressed his entire concurrence at the verdict which they had recorded.

*Remarks.*—There are several points in which this case is of great interest to the medical jurist. In the first place, it became a question as to the existence of an acquired idiosyncrasy to the influence of mercury, under a diseased condition of the kidneys. I do not know that any attention has been paid to this subject by toxicologists. I have not been able to find any reference to it in the toxicological works of Orfila and Christison.\* Many eminent medical practitioners, I believe, agree in the view, that the use of mercury is contra-indicated in cases of renal disease, where the urine is albuminous; as, under these circumstances, this medicine has been frequently observed to give rise to uncontrollable salivation. Evidence was, however, here given to shew that the views of the profession were not uniform on this point; and the opinion of Dr. Williams, in favour of the practice, was quoted by the solicitor for the prisoner. The coroner was, therefore, so far correct, in leaving this to the jury as a still unsettled question; since it could not be said that any

\* Dr. Christison has informed me since the above was written, that the result of his experience on the subject is contained in his work on Granular Degeneration of the Kidneys, p. 141.



practitioner, who chooses to employ calomel (provided he keeps within proper limits as to the dose), is to be precluded from its use. This would do away with freedom of judgment in the practice of medicine, and be placing medical practitioners in the dangerous position of having to answer charges of manslaughter for every untoward result in their practice. Medical experience is proverbially uncertain; and we daily find that persons recover from diseases or accidents under diametrically opposite modes of treatment, each practitioner regarding the other as acting upon most dangerous and improper principles.

The fact may, therefore, be clearly admitted, that, as a general rule, mercurial preparations, even in small doses, are liable to produce excessive salivation in persons affected with renal disease; but this would not bind every medical man to avoid their employment; nor, in the event of an untoward result, would it justify a charge of manslaughter against him; because, in fact, his individual experience may not have led him to concur in the correctness of the general opinion. I am here considering this question in the abstract, and as it may affect hereafter any medical practitioner; for principles once correctly laid down, will apply to all persons who practice medicine, whether with or without a diploma.

The great question, as it affected the prisoner, in this case, was not so much whether the use of calomel was or was not proper under the circumstances, as whether it was likely to have been the cause of excessive salivation and death, in the doses in which he ordered it to be taken. It is clear, that if a medical man prescribe a certain dose of a powerful medicine (as prussic acid), or of a medicine likely to act powerfully on the body, as mercury, in diseased kidneys, written directions being given so that there may be no room for mistake; and double the quantity be administered, it would not be just to make him responsible for the results. If the rule were otherwise, what practitioner would be safe for a single day from the mistakes made by patients? Therefore, the question in reference to the prisoner was, not whether death had really been caused by the quantity of mercury actually given, but whether the excessive salivation and death would have been likely to arise from the doses which he actually prescribed.

Mr. Vines's evidence renders it apparent that salivation had

followed in the usual period after the exhibition of mercury; that it was profuse, and had the effect of exhausting the patient; that for thirteen days before death no mercury had been given; that about five days before death (on the 20th) the salivary discharge had diminished, but the mouth was still very sore; and on the 23d, two days before death, the gums were still ulcerated, and bleeding at intervals. These facts tend to shew that the exhaustion produced by the salivation, might have accelerated death, although the proximate cause was the disease under which the deceased was labouring.

It appears that eleven grains and a quarter of calomel were taken, during a period of five days, instead of the quantity ordered, *five grains and a half*. Admitting the existence of an idiosyncrasy to the effects of mercury in persons affected with renal disease, the quantity taken would fully account for the occurrence of violent salivation; although it would be only a moderate dose under other circumstances: and perhaps even half the quantity (*i.e.* the doses prescribed) might have produced serious effects, although it is impossible to affirm that it would have necessarily occasioned death. To prescribe a grain of calomel daily, under the circumstances, for five days, could hardly be pronounced an act of gross ignorance and criminal carelessness; yet, without the expression of a positive opinion of this kind, the party prescribing the medicine could not be committed on a charge of manslaughter.

The verdict of the jury was probably based on many circumstances favourable to the prisoner. The quantity of calomel prescribed by him was small. Admitting that it was not an advisable medicine in cases of renal disease, evidence was adduced to shew that some difference of opinion among medical men might fairly exist on the subject. He had given written directions respecting the doses, but these, through the inattention of the wife, had been doubled. The patient had exposed himself to night-air while taking the medicines; and when informed of the effects of the pills, the prisoner had ordered them to be discontinued. These facts necessarily weighed strongly in his favour, and led to his discharge. The case, however, is of importance, in shewing the injurious effects which may occasionally arise from the use of even small doses of mercury in disease of the kidneys.

I subjoin, with Dr. Christison's permission, an extract from a letter which I have lately received from that gentleman, in reference to the use of mercury in cases of granular degeneration of the kidneys.

"MY DEAR SIR,

*"Edinburgh, August 31, 1846.*

\* \* \* \* \*

"In cases of this disease I have repeatedly observed that mercurial action is brought on by unusually small doses of the compounds of mercury, or unusually soon; and I have also sometimes observed the action to be unusually violent in such circumstances. I cannot say that I have ever seen violent uncontrollable action induced on any occasion; neither have I seen mercurial action, even in its slighter degrees, brought on by the very small doses (such as a single dose, or two doses of calomel), which are well known to act with violence in certain constitutions not otherwise materially unsound.

"I suppose, from what some London physicians have written on the subject, and from the case alluded to by you in your letter, that the constitutional sensibility to mercurial action, induced by disease of the kidney, has been noticed in a greater degree in London than here. At all events, we are not deterred here, by any thing we have witnessed, from using mercury as an adjunct to other remedies, such as diuretics and cathartics, in granular disease of the kidneys. We watch it more narrowly, find its constitutional action more easily excited, but experience no difficulty in controlling this action when brought on.

"I am, yours most truly,

"R. CHRISTISON."

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### CASE OF POISONING BY ARSENIC.

PREGNANCY, NOT FOLLOWED BY ABORTION—DETECTION  
OF THE POISON IN AN ENTOZOON.

IN July 1845 I was consulted by Mr. Carter, surgeon, of Newbury, respecting the death of a female under the following circumstances. The deceased was a female servant, unmarried, and aged twenty-two years. While engaged in her domestic duties, in her usual state of health, on the 22d July, she complained of sudden indisposition and retired to her bed-room. She was shortly afterwards attacked with



violent vomiting and diarrhœa, which continued incessantly, with intense thirst, severe pain, and a sense of burning heat in the stomach, accompanied by spasms, more particularly in the muscles of the lower extremities. This attack took place about mid-day. Mr. Carter was not called to her until seven o'clock in the evening. She was then in a state of collapse, and died in half an hour afterwards; the whole duration of her illness being thus about seven hours. At first it was suspected to be a case of English cholera in a severe and aggravated form; but a rumour having been spread that the deceased was pregnant, and had secretly used means to procure abortion, an order was given by the coroner for an inspection of the body. This was performed by Mr. Carter. From the post-mortem appearances he was inclined to suspect that the deceased had died from the effects of some irritant poison, and the stomach and intestines were forwarded to me for examination. It was ascertained by the inspection that the deceased had reached the fifth month of her pregnancy. In Mr. Carter's opinion gestation had not gone beyond the first, or at furthest the second week of the fifth month.

The viscera were examined five days after death. The stomach had been opened, and its contents had in great part escaped into the vessel in which it was forwarded. The intestines were entire, and the duodenum and rectum secured by ligatures.

The stomach was somewhat red externally, and its vessels were congested. Internally the whole of the mucous membrane was inflamed, presenting a red-brown colour, but passing into a much deeper red tint at the cardiac and pyloric extremities. The surface presented no mark of ulceration, abrasion, or erosion; it was covered in places by a curdled mucous liquid, mixed with blood, in which were enveloped masses of a white substance resembling a paste of plaster of Paris. This pasty matter was especially observable at the lower part of the organ, towards the greater curvature: it was easily detached from the mucous membrane, which was in a state of integrity beneath. The same kind of substance was found on the mucous membrane at the pyloric end. The mucous glands were enlarged. The lining

membrane of the duodenum was entirely inflamed, and this inflammatory appearance, but to a less degree, was observed throughout the whole tract of the small intestines to the cœcum. There was no sign of ulceration or erosion in the intestines: they contained a large quantity of a watery liquid mixed with blood and mucus. On the surface of the mucous membrane of the duodenum, near the pylorus, was some pasty matter like that which was observed in the stomach. The mucous glands were throughout enlarged. The cœcum contained a large quantity of blood and mucus in flakes, mixed with a pasty substance. The remaining portion of the large intestines presented no appearance calling for particular remark. The lining membrane of the rectum scarcely differed from its healthy state, except in an unusual prominence of the mucous fluids. Neither food nor fæces were found in any part of the alimentary canal. In the ileum there was a *lumbricus teres* about eight inches long.

*Analysis.*—The pasty matter found on the mucous membrane of the stomach, when examined by a lens, presented a crystalline appearance: it was closely enveloped in masses of mucus and blood. On washing a portion in a small quantity of distilled water, it appeared, when dried on bibulous paper, as a whitish crystalline powder. A portion was heated with incinerated tartrate of soda, and a distinct iron-grey sublimate, evidently of metallic arsenic, was immediately obtained. The nature of this sublimate was determined by filing off the ring of glass on which it was deposited and gently heating it in a large tin tube. By this process a white crystalline deposit was obtained, the crystals presenting all the characters of octohedra when examined by a lens. This white sublimate was dissolved on boiling in a few drops of distilled water, and the solution gave, with ammonio-nitrate of silver, ammonio-sulphate of copper, and sulphuretted hydrogen gas, the results which are peculiar to arsenious acid.

A portion of the bloody liquid obtained from the duodenum was then boiled in water with a small quantity of pure and concentrated muriatic acid: and some plates of polished copper, with portions of fine copper gauze, were introduced. These were instantly coated with a dark me-

tallic layer, like that which results from arsenic under similar circumstances. Many square inches of copper were in this way completely covered with the metal, which was proved to be arsenic by gently heating a portion of the coated copper in a small tube, when a well-defined ring of arsenious acid, in octohedral crystals, was obtained. The copper gauze, as might be expected from its greater extent of surface, yielded readily a large quantity of arsenious acid by this process. The contents of the cœcum were also proved to be impregnated with arsenic. The quantity of arsenious acid found in or about the stomach, and effused as part of the contents in the jar, was estimated at twenty-five grains; and it was calculated that, independently of what was diffused through the small intestines, there could not have been less than twenty grains in the contents of the cœcum.

An opinion was therefore given, that the deceased had died from the effects of arsenic, a large quantity of that poison having been found in her body.

No additional facts were elicited at the inquest, except that a suspicion of the deceased's pregnancy had been for some time entertained by her mother; and that after she was seized with illness she took some tea and went to bed. There appears to have been great neglect in not sending for medical assistance until within a short time of her death. The evidence rendered it somewhat probable that the deceased had procured the poison and taken it herself. The verdict, while it found that the deceased had died from arsenic, left the question of administration open.

*Remarks.*—This case appears to furnish some points of interest in a medico-legal view. Death took place with great rapidity; the whole duration of the case not occupying more than *seven hours*, and probably even a shorter period than this. The dose of poison taken must have been large, considering that the deceased suffered from incessant vomiting and purging during life; and that, notwithstanding the clearance of the alimentary canal from food and fæces, a large quantity of the poison was still found within the body after death. The action of the poison was favoured by the emptiness of the stomach, and by the want of all reme-



dial treatment. It has been supposed that in arsenical poisoning, where the dose is large and death ensues in the course of a few hours, the symptoms partake less of the characters of irritation, and more commonly indicate an affection of the nervous system. This case, however, with many others on record, shews that arsenic may operate as a pure irritant under these circumstances, even when the conditions are most favourable to its absorption. The spasms observed in the muscles of the deceased were probably nothing more than the cramps which are met with in every case of severe diarrhœa, arising from whatever cause; and are not peculiar to arsenic or indicative of the specific operation of the poison on the nervous system. Its action as an irritant was also here indicated by the extensively-inflamed condition of the greater portion of the alimentary canal within the short period of seven hours. The analysis requires no remark: it was exceedingly simple, owing to the poison having been freely found in a solid state. The process of Reinsch, used in analyzing the liquid contained in the small intestines, has now rendered the detection of arsenic in the dead body so easy an operation, as to supply all that can be desired by a medical jurist. The great efforts of toxicologists were formerly directed to the separation of organic matter from arsenic by acids, chlorine, animal charcoal, and similar decolorizing agents; but Reinsch has most clearly proved by his discovery that the best method of proceeding is to separate *the arsenic from the organic matter*. By his plan pure arsenious acid may be obtained in a perfectly crystalline state in about ten minutes, or even a shorter period of time, from any liquid or solid containing the poison, however complex the nature of the organic mixture may be.

Being desirous of ascertaining how far the entozoa of the human body were likely to become impregnated with the poison, when arsenic had been the cause of death, the *lumbricus teres* found in the small intestines was repeatedly and carefully washed in distilled water, in order to free it from all adhering mucus or blood, and from any portion of the poison mixed with them; and it was then cut up and boiled for two hours in one part of pure muriatic acid and eight of water, the loss by evaporation being made up. The worm

was thus reduced to a disintegrated mass, which was separated from the acid liquid by filtration. Plates of polished copper were then introduced; and on bringing the liquid to the boiling point, the metal was immediately coated with a dark grey layer like that produced by arsenic. The nature of the deposit was established by heating a thin slip of the coated copper in a small tube, when a well-defined ring of arsenious acid was obtained in octohedral crystals. The quantity of metallic arsenic thus procured from the body of the worm was exceedingly small; but it was sufficient to cover four square inches of polished copper with a layer of the metal. The poison had most probably penetrated during life into the porous body of the worm, from some portion which had been taken up by the fluids of the intestines: the results obtained, could not be attributed to any portion adhering to its outer surface. Thus when arsenic is not detected in the contents of the stomach and intestines, it may perhaps be found in the bodies of these entozoa, should any of them be met with in the alimentary canal.

This was the second case during the year 1845 in which I had met with lumbrici in the bodies of persons poisoned by arsenic. It may be here mentioned, as a singular fact, that although the mucous coat and substance of the stomach were thoroughly impregnated with arsenic, partly from absorption and partly from mechanical adhesion, yet on exposing it to the air, for the purpose of desiccation, it was partially covered, in the course of a short time, with the ova of the *musca carnaria*, which went through their usual stages of development apparently uninjured by the poison which surrounded them.

The case suggests one other point of interest in relation to criminal abortion. Gestation had advanced to that stage (the fifth month) which rendered it quite compatible with the known effects of irritant poisons, that the uterus should have expelled its contents. Perhaps, too, in arsenical poisoning, more than in some other cases, the general system sympathizes strongly with the local disturbance. There was violent vomiting, with diarrhœa, for some hours, yet we find that abortion did not take place. It adds, then, another proof to the many on record, that the uterus will retain its

contents while the female system is suffering from a most severe cause of irritation; and that the death of the woman will take place without the expulsion of the child. The degree to which this sort of irritation may be withstood will probably vary much with the constitution of the female. I much regret that there was no opportunity of examining the fœtus, the inquiry being restricted to the cause of death in the female. The analysis of some of the organs of the fœtus, might have thrown some light on the absorption and diffusion of poisons.

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### CASE OF POISONING BY CORROSIVE SUBLIMATE.

#### RECOVERY.

THE following case of poisoning by corrosive sublimate occurred in the hospital during the last summer. I saw the woman soon after her admission; but I am indebted to my former pupil, Mr. S. W. Devenish, for the following concise report of the case.

S. C——, aged 25, admitted June 23, 1846, labouring under symptoms of poisoning by corrosive sublimate, which she had taken dissolved in spirits of camphor. Married; of intemperate habits. About five o'clock this morning, from some disagreement with her husband, she attempted to take some poison. She took into her mouth a tablespoonful of a mixture containing corrosive sublimate dissolved in spirits of camphor; but her husband seizing her by the throat prevented her from swallowing it; that is to say, all but a very little, and she spat the greater part out again. She immediately felt a strong coppery taste, with burning heat in the mouth and throat, attended with a difficulty in swallowing. In about five or ten minutes she vomited.

*Symptoms on admission.*—She appeared excited, and there was no collapse or coldness of the extremities: these were warm and moist. Her face was very much disfigured by the projection of the lips, which had become considerably swollen and excessively tender. On examination, the fauces were not much injured, the action of the poison being chiefly confined to the mouth. Some of the fluid had run down from each corner of the mouth, producing patches of inflammation exter-



nally: the mucous membrane of the lips and tongue had a whitened aspect; there was a great deal of retching, and she vomited, but not violently; the pupils were dilated; conjunctivæ inflamed; painful headache; pulse at first unaffected, subsequently quickened to 112, irregular; her breathing was unimpaired, so that the rima glottidis was uninjured. She passed her water freely, in large quantity; urine pale, not bloody; no diarrhœa; no pain at the stomach. Took no food since eight o'clock last night; sometimes feels sleepy; is very thirsty. The pain in the throat afterwards extended to the chest. Sub-maxillary glands enlarged and tender; gums unaffected; no salivation nor fœtor.

*Treatment.*—Two dozen eggs and milk. The vomited matter but slightly tinged with blood.

10 P.M. Has passed no motion; no pain at the stomach, nor sickness; mouth and throat painful; able to pass urine; pulse full, not so jerking; is very restless. Enema of gruel and castor-oil.

24th. Much better; lips nearly natural size; mucous membrane peeling off; gums sore; throat painful; sick occasionally; bowels unrelieved by enema.

25th. Bowels opened last night; stool dark-coloured, unhealthy, and offensive; liquid portion like porter, the solid pale, not tinged with blood; feels better; pulse 80; sleeps well; no head-ache; still complains of throat; unable to swallow much food; passes water freely; mucous membrane still peeling off; pain extending further down the chest.

29th. Nearly well; mouth slightly sore; gums more so; sleeps well; bowels confined; no pain in chest. Is going out.

*Analysis.*—Matter first vomited, previous to the exhibition of the antidote, smelt strongly of camphor; was neutral; gave no immediate deposit with copper and muriatic acid, but a slight grey precipitate with protochlor. tin. Zinc and gold, immersed in the liquid acidulated with hydrochloric acid, had no effect until after forty-eight hours, when there was an evident indication of the poison; and metallic mercury, in a small quantity, was obtained from the gold on sublimation. The matter subsequently vomited gave similar results.

*Original Poison.*—Dirty colour; smelt powerfully of cam-

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phor. After throwing down the camphor by water, the filtered liquid indicated the presence of a large quantity of corrosive sublimate, by the usual tests, *i.e.* iodide of potassium, hydrosulphuret of ammonia, and metallic copper.

*Remarks.*—It is probable that but a small quantity of the poison had been taken in this instance: a most violent local action had, however, been exerted by it on the mouth and lips. The lining membrane of the mouth was quite white, but not abraded: the lower lip completely everted, and probably swollen to an inch in thickness. The symptoms were those of general irritation. The gums were sore after a few days; but there was no salivation, nor was there at any time suppression of urine.

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#### CASE OF POISONING BY CORROSIVE SUBLIMATE.

DEATH IN LESS THAN HALF AN HOUR.

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THE following case, communicated to me by Mr. John Welch, of Drury Lane, is remarkable as being the most rapidly fatal case of poisoning by corrosive sublimate on record.

On Friday evening, June 19, 1846, about five minutes after six, Mr. Welch was summoned to attend a man who was said to have taken poison, but of what kind was not known, except that its appearance was white. A period of less than five minutes had elapsed before Mr. Welch saw the patient. On his arrival he found the man totally insensible; the breathing somewhat laborious (almost inclined to stertor); pulseless at the wrist, with a countenance pallid, but neither anxious nor distorted. In less than a minute after his arrival, without any struggling or convulsion, he died. On examining the mouth, lips (interiorly), and fauces, they presented an entirely uniform appearance in colour, such as "would immediately follow the application of a strong solution of lunar caustic;" in other words, they were white and corroded. This at once explained the precise nature of the poison. Near the body was found some portion of the contents of the

stomach, of a watery character, tinged with mucus. This was collected: it amounted to about a large tablespoonful, shewing how little he had vomited. The room, as well as his person, were closely examined, but no trace, either of poison or of paper which might have contained it, could be found. The fire, which was almost out, had a piece of twisted paper on it, which, however, was so burnt to a cinder that it fell to pieces in trying to remove it. The external jugular vein was opened by Mr. Welch when he was first called, as the compression on the brain appeared to be the most urgent symptom; but little blood flowed from the incision. On inquiry, Mr. Welch ascertained the following particulars:—

The deceased was a man of intemperate habits aged about 30; and on the afternoon of this occurrence had been drinking, which may account in a great measure for the stertor and want of sensibility. Between five and six o'clock he sent his wife out for some porter, and while she was gone he mixed a white powder (corrosive sublimate) in a milk-cup, with some tea, and, after pouring it into a cup, drank it off. On her return, seeing the froth issuing from his mouth, she taxed him with having taken poison, which he admitted. She immediately raised an alarm, which brought to her assistance some neighbours, who went for medical aid. They were unsuccessful until they found Mr. Welch, and he reached the spot in less than five minutes: so that, from the time the first alarm was given, which was at *ten minutes to six* (so sworn to by one of the witnesses), and the arrival of Mr. Welch, which he noticed to be at *ten minutes after six*, not more than twenty minutes could have elapsed; and adding to that another additional five minutes—that being the time his wife was away fetching the porter, which was at a public-house only three or four doors off—it appears certain that the death of this man took place in less than HALF AN HOUR. Until the occurrence of this case, the shortest period in which a person has died from this poison was *two hours*; and this rested upon evidence of an inferential nature. According to the account given by a bystander, the only symptoms of which the deceased complained were a burning heat in the mouth and great nausea. The ordinary train of symptoms peculiar to this poison do not appear to have presented



themselves. Mr. Welch subsequently analyzed, not only the liquid which was in the cup, but also the contents of the stomach; and the results, in both cases, clearly proved that corrosive sublimate had been taken. An inquest was held, and the jury returned a verdict, "That the deceased had died from the effect of corrosive sublimate, taken whilst in a fit of temporary insanity brought on by repeated intemperance."

No post-mortem examination was made, as, from the satisfactory evidence of the cause of death, the coroner did not regard it as necessary. Considering the striking peculiarity of this case, namely, its rapidly fatal termination, this is much to be regretted, as it might have added some interesting facts to our pathological knowledge of the early effects produced by this poison on the body.

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#### CASE OF POISONING BY CORROSIVE SUBLIMATE.

H. H—, a messenger to the Hudson's-Bay Company, and a man of dissolute habits, in a fit of despondency, or temporary insanity, swallowed a quantity of this poison under the following circumstances:—

On the morning of April 16, 1846, about eleven o'clock, he called at a druggist's shop and asked for two pennyworth of corrosive sublimate *in solution*. The druggist took some of the powder out of the bottle on the end of a spatula (about  $\frac{1}{2}$  i.), and rubbed it down with something fuming (hydrochloric acid?), and some distilled water (about half a pint), and gave it to the man, who soon afterwards swallowed the *greater part* of it. He was shortly after taken with violent vomiting and purging: he experienced great heat and soreness of the fauces and œsophagus in the act of swallowing the poison. For these symptoms the druggist who was applied to, exhibited some liquor calcis, but with what object is not known, as the resulting compound, red oxide of mercury, is almost if not quite as poisonous as corrosive sublimate. He also applied the tests for the poison to the matters first ejected from the stomach, and proved its presence in considerable quantity. The man was brought to the hospital at half-past eleven, and active treatment was commenced immediately. The patient was a stout muscular man, with a

short thick neck. His countenance was anxious, with considerable lividity, especially about the forehead.

He came in with the following symptoms:—Cold extremities, of a general lividity of the surface, especially about the backs of the hands, cheeks, and forehead, which presented a purplish-black appearance. The surface of the body was warm, and skin soft. The functions of the brain and nervous system were not materially affected. He appeared anxious and desponding, and was affected with rigors and frequent chattering of the teeth, without any sense of cold in any part of the body; pupils at first natural and obedient to variations of light; they were subsequently contracted; functions of respiration normal at first; pulse about 100, small and feeble; feet and hands cold; violent vomiting and purging, the former occurring at first every two or three minutes, subsequently every half hour. The vomited matter consisted of mucus and albumen (the latter had been administered), tinged with blood. Purging every hour throughout the day, the stools consisting at first of little else than mucus and blood, became more and more *fæculent*. The tongue was covered with a greyish-white crust, resembling the effect of nitrate of silver; its margin was of a bluish colour. There was great heat and soreness of the mouth, fauces, and œsophagus, especially while in the act of swallowing any liquid; the gums had receded from the base of the crowns of the teeth, and presented a leaden-blue margin; there was some pain at the *scrobiculus cordis*; the abdomen was, however, generally free from pain; there were occasional cramps of the lower extremities. On the 18th the symptoms were ameliorated; stools more *fæculent*; vomiting and purging abated. The vomited matters were of a blackish-green colour; pulse 90, soft and small; scarcely any sleep. On the 19th, vomiting and purging at intervals of three quarters of an hour; he became delirious. On the 20th, the symptoms were aggravated; the blue line round the border of the gums was still observed; there was general tremor, with cramp of the extremities. He died at nine o'clock p.m. on the 20th, having survived the effects of the poison rather more than four days. It is worthy of remark, that there were no symptoms of salivation, nor was there any secretion of urine during the whole progress of the case.

## POST-MORTEM EXAMINATION, SIXTEEN HOURS AFTER DEATH.

Calvarium of a peculiar shape, much depressed on each side at the situation of the anterior inferior angles of the parietal bones. Membrane of the brain rather opaque; a considerable quantity of fluid beneath the arachnoid. The whole brain was remarkably pale; anæmial; two apoplectic cysts were found, one near the upper surface of the right anterior lobe, the other very near the inferior surface of the middle lobe on the left side; each cavity would contain a large pea, and it was lined with a thick pale yellow crust (fibrin). *Lungs* appeared somewhat consolidated, as if from early pneumonia, their tissue readily breaking down on pressure. *Heart* healthy; its cavities filled with colourless firm fibrin. *Kidneys*—Secreting structure congested; mucous membrane of one pelvis had a spot of ecchymosis. *Bladder* empty and contracted; some small pink spots on its mucous membrane. *Œsophagus*—The mucous membrane had a vermilion hue. *Stomach* presented a pink colour on its inferior surface, near its middle; some fibrin upon it. *Duodenum* tolerably healthy. *Small intestines* healthy, lined with thick yellow mucus. *Cæcum* and ileo-cæcal valve shewed signs of the most intense inflammation; some portions of a deep purplish-black colour, with patches of sloughing mucous membrane, tinged green by fæces. *Colon and Rectum* also exhibited traces of the most violent inflammation, especially the ascending and transverse colon. Here were found oval patches of sloughing mucous membrane, about the size of small almonds, and tinged green by fæces passing over them. These patches were symmetrically disposed throughout nearly the whole extent of the large intestine, in transverse rows of three, each patch corresponding to a sacculus, and separated from its neighbour by a longitudinal band of muscular fibre. The mucous membrane between these was of a deep purplish-black hue, with arborescent vessels at small intervals.\*

*Remarks*—A case somewhat similar to this will be found reported in the Number of this Journal for April 1844, p. 24. In both there were the ordinary signs of irritation, and in both there was complete suppression of urine, continuing throughout the whole duration of the case. The case re-

\* Reported by Mr. Hooper.



ferred to terminated fatally in three days: in the present instance the duration was four and a half days. There was, however, one remarkable difference in the symptoms, which shews what anomalies may be encountered in the action of this poison. In the first case salivation made its appearance so early as *four hours* after two drachms of the poison had been taken: in the present case, one drachm was taken; and although the individual survived nearly *five days*, there was no salivation at any time. In the first case, the large intestines were highly inflamed throughout: in the present instance the inflammation was most marked about the cœcum and ileo-cœcal valve.

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### CASE OF POISONING BY LEAD,

WITH THE CHEMICAL ANALYSIS, AND REMARKS ON THE  
DETECTION OF LEAD IN THE TISSUES.

R. W——, aged 27; admitted under Dr. Addison, April 22d 1846; unmarried. For some months she has been leading a most irregular life, and has been sometimes drunk for a week together. It was supposed, at the house where she had been living that she had taken something to produce abortion.

Five months ago the menses ceased to appear, without any apparent cause. No inconvenience followed until ten weeks since, when she was suddenly attacked by vomiting and cold shivering, with severe pain in the knees. Pain in the knees and vomiting continued for some days, after which dull, aching pains in the stomach and back came on. Three weeks since she underwent medical treatment for chronic gastritis, with some benefit. On a relapse she was sent to the hospital. Her bowels, during the whole ten weeks, had only been opened under the use of medicine.

*Symptoms on Admission.*—Patient has a light complexion, and dull, puffy, aspect. She has a slight cough at night; severe constant pain in the loins, in the left iliac and lumbar regions, and on the anterior part of the abdomen, which is increased by pressure; inguinal glands on the left side enlarged; bowels were open on April 17th, and again on the 21st; pulse 104, small, compressible; tongue dry, red; skin dry, hot. Menses have not appeared for five months. Urine

contains a small quantity of albumen.—Pil. aloës.  $\bar{c}$  myrrhâ bis in hebdom. Mist. ferri c. ter die.

April 23d. Could not sleep. Says she has scarcely slept for nine weeks. Pain more severe; bowels not open.—Hyd. chloridi gr. iv.  $\bar{c}$  opii gr. i. st. Ol ricini  $\bar{z}$ ls. statim, et post horas iv. si opus sit.

24th. Pain continues; no sleep; no motion.—Hirudines xij. parti dolenti. Hydr. chlor. gr. v. Enema ol. ricini.

25th. Again no sleep. Injection returned without fæcal matter; patient has vomited a dark brown fluid; pain in the loins and abdomen very intense. For the first time, a distinct blue line was noticed on both gums, and it was found that she could not extend either wrist to a full extent.—Colocynth.  $\bar{c}$  cal. Balneum calidum. Injiciatur alvo aqua calida.

26th. Patient very delirious all night; she seems sensible this morning. Pain somewhat mitigated by the bath. Bowels not open; paralysis of extensors of wrist has become much more marked. During the day the hands have been trembling very much.—Ol. crotonis gutta i. st.

At seven o'clock P.M. the patient had a fit. After this she remained insensible, occasionally struggling very much. Pupils almost immoveable; right rather more dilated than the left; right side moved more freely in convulsions than left; pulse 80, soft. At 9 P.M. there was a copious evacuation.—Emplast. lyttæ temporibus.

27th. Patient still insensible; bowels open three or four times; none of the limbs moved; respiration 60 per minute, somewhat stertorous; pulse 140; a nauseous odour exhales from the body; blisters produced but little vesication.—Enema assafœtidæ. Catapl. sinapis pedibus.

28th. Unconsciousness continues; slight convulsions this morning at 9 A.M.; pupils fixed, equal; respiration 68; Pulse 148, more feeble; urine and motions passed in bed; surface of body warm, moist; arms and legs drop when lifted up.

29th. Patient had three fits in the night, and died at half-past nine this morning.

POST-MORTEM EXAMINATION.—A considerable quantity of clear serum was found beneath the arachnoid; brain pale, blood-

less ; clear pale fluid in ventricles ; defined consolidations in both lungs : the heart was healthy. The peritoneum, especially that covering the ventricles, had a greasy aspect. Liver healthy ; spleen small and soft ; kidneys small ; cortical structure atrophied, portions of it easily torn off in removing the external tunic. The muscular coat of the stomach hypertrophied, especially towards the pylorus, where it constricted the opening ; the mucous membrane of the stomach was thick and rugose. The large intestines were irregularly contracted and distended ; there were spots of congestion scattered on the mucous coat ; the salivary glands were enlarged.\*

*Chemical Analysis.*—As there was a suspicion, from the state of the gums and other symptoms, that the deceased had, at some previous time, taken lead as a poison, the liver was dried and incinerated, and the ash thus obtained was digested in water, containing one-eighth part of strong nitric acid. The acid solution thus obtained contained a large quantity of phosphate of lime and iron, and left, on evaporation, silica, probably derived from the crucible. The acid liquid, evaporated to dryness, was again digested in a small quantity of very diluted nitric acid and filtered. Diluted sulphuric acid gave, with this liquid, a white precipitate, not entirely soluble in potash, because phosphate of lime was precipitated by the alkali from the acid solution. The acid liquid was also precipitated, of a deep greenish-black, by a current of sulphuretted hydrogen gas ; and on adding more nitric acid, the sulphuret of iron was removed, and a light-brown precipitate remained, which was sulphuret of lead. A portion of the original liquid was then strongly acidified with nitric acid : sulphuretted hydrogen was passed into it, and a brown precipitate of sulphuret of lead only was now thrown down, the iron being suspended. A portion of the original liquid, nearly neutralized by potash, gave, in a few seconds, the brilliant yellow precipitate, in crystalline scales, of iodide of lead. The galvanic test of zinc and platina did not answer, the quantity of lead present being too small. The tests acted clearly and decidedly, leaving no doubt that lead was present in the liver of the female in comparatively large quantity.

\* Reported by Mr. W. H. Greenwood.



*Remarks.*—This case is interesting in several points of view. The suspicion entertained by Mr. Greenwood that the system of this female was impregnated with lead, from the blue line observed in the gums three days after her admission into the hospital, was fully confirmed by the result of the analysis of the liver. The detection of lead in the tissues also appears to shew that this symptom, first pointed out by Dr. Burton, is of great value in diagnosis: for it could not be ascertained with any certainty from this female, or any of those who knew her, that a salt of lead had been taken, and yet it is impossible to doubt that some salt of lead must have been taken. The other symptoms observed during life, such as vomiting, obstinate constipation, and paralysis, also corroborate the view that this was a case of poisoning by lead. The pain in the abdomen, unlike that produced by lead, was, however, increased by pressure.

The post-mortem appearances resemble those which have been met with in cases of chronic poisoning by lead. This remark applies more especially to the state of the large intestines, which were found irregularly contracted and distended. There were no signs of irritation or inflammation in any part of the alimentary canal.

Are we to regard this as a case of acute or chronic poisoning by lead? The rapid progress of the case, and the severity of the symptoms after the admission of the female into the hospital, appear to indicate that it was an acute case. The question here arises, however, What is the shortest period, after lead-poison has been taken, within which blueness of the gums may appear? This state of the gums, as it has been elsewhere mentioned, was not observed until the third day; and it is somewhat unfortunate that we have so obscure an account of the condition of the patient before her admission into the hospital. Blueness of the gums has, I believe, been hitherto regarded as a symptom peculiar to the chronic form of poisoning; and, so far as I am aware, there are no facts to enable us to state within what period, in an acute case, this symptom may appear. The absorption of lead, when its salts are taken as poisons, certainly goes on with great rapidity; and the metal is soon found in the organs and secretions; but it may require a much longer

time for this effect of the metal to be made apparent in the gums. On the whole, I am inclined to think, from the severity of the symptoms, that a large dose of the poison had been taken only a few days before her admission. The deceased may, however, have taken small doses of sugar of lead some weeks previously, as it was alleged, for the purpose of procuring abortion, under the idea that she was pregnant. To this the chronic gastritis and obstinate constipation might perhaps be referred.

Lead has been of late years so frequently detected in the soft organs and secretions, that the presence of it in the tissues of the body may now be looked for with some certainty, when it cannot be discovered either in the matter vomited or in the contents of the stomach after death. I believe that the liver, from its size and from the large quantity of blood which it contains, is the organ best adapted for analysis, when we wish to detect lead, or any other metallic poison. Here, as in the incineration of any of the soft parts of the body, the analyst is liable to be embarrassed by the presence of phosphate of lime and oxide of iron in the ash. The first necessarily renders obscure the solubility in caustic potash of the precipitates of lead formed on the addition of the tests; and the last gives a colour with sulphuretted hydrogen gas, which, if this test alone were employed, might easily lead to serious error. The sulphurets of lead and iron are, however, very differently affected by nitric acid; and on making the liquid rather strongly acid with this menstruum, we are quite sure that no sulphuret of iron will be formed. In an acid mixture of these two metals, brown sulphuret of lead only is precipitated. This precipitate, however, digested in strong nitric acid, is immediately converted to sulphate and nitrate of lead.

In searching for this metal in the viscera, I need hardly observe that perfectly clean apparatus should be employed. Lead might be introduced accidentally into the ash by the crucible, or in other ways which will easily suggest themselves; and as the tests for this metal are of exceeding delicacy, it is the more necessary to use extreme caution in our proceedings. I believe that every precaution was here taken to avoid any fallacy; and the chemical reader will observe

that the three most important tests for lead—sulphuric acid, sulphuretted hydrogen, and iodide of potassium, answered perfectly, the results of one test thus corroborating those obtained by the use of the others. No traces of metal in a reduced state were procured; but this is not necessary in order to enable a chemist to express a positive opinion of its presence. From the very decided results procured by these tests, I should infer that lead was present in the liver in much larger quantity than it is ever found in cases of colica pictorum; and for the same reason, admitting the existence of normal lead in the body, it appears to me impossible to refer the results to that minute portion of lead which has been said to form a constituent part of the soft organs in healthy persons. In reference to this objection to the analysis of the tissues, I would beg to observe, that, on examining the ash obtained by incinerating the soft parts of the body for lead and copper, I have not found a trace of those metals, where care had been taken to exclude them during the analysis, and *several tests* had been employed. If sulphuretted hydrogen gas only be used as a test, I can easily imagine that iron would be frequently mistaken for lead.

There is one other remark respecting the discovery of lead in the tissues of persons, who have been poisoned by the salts of this metal. The quantity of nitric acid and water in which the incinerated ash is digested should be at a minimum, since the subsequent neutralization of much nitric acid, in a large quantity of water, will materially interfere with the action of the tests. The bulk of the ash may be reduced by finely powdering it, agitating it in a large vessel of water, and pouring off that portion which is suspended. The lead will be found in the heavier particles, which subside instantaneously.

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### CASE OF POISONING BY SUGAR OF LEAD.

#### RECOVERY IN FIVE DAYS FROM A LARGE DOSE.

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THE following case presents the ordinary train of symptoms which are observed in acute poisoning by acetate of lead. It adds another to the instances already recorded of recovery from a very large dose of this salt.



M. A——, aged 41; admitted into the hospital May 29, 1846, labouring under symptoms of poisoning by sugar of lead. Is married, and has had seventeen children; is a laundress, living in the Dover Road; has worked hard; lived freely, drinking porter at meals, and spirits occasionally; has enjoyed very good health previous to the last confinement, which was a severe one. Since then she has been frequently giddy, and loses her senses for some time.

It appears that she attempted suicide from family disagreements. Says she took fivepennyworth of sugar of lead, or half a tea-cup full dissolved in some water.

*Symptoms before Admission.*—She felt ill almost directly; had a nauseous metallic taste in her mouth, with a burning heat in the mouth, throat, and stomach. She took some more water to wash down the taste. This made her vomit, and thus she was detected by her friends. Her mouth became very dry; had great pain at the pit of the stomach and excessive vomiting.

*Symptoms on Admission*, two hours after the poison had been taken—She felt sleepy and stupid, alternately perspiring and shivering. Complained of violent twisting pain in the abdomen, but relieved by pressure; this, however, caused a sensation of sickness. She felt exceedingly weak and languid; had a feeling of cramp in the thighs, and numbness all over the body, with giddiness. The gums felt to the patient to be in lumps, and there was apparently a blue line on the edge: they were very tender. The saliva seemed rather in excess; and the breath was of an unpleasant odour.

*Treatment.*—Magnesia mixture and sulph. zinc. to encourage the vomiting. Also some castor-oil, which acted two hours afterwards. The pulse was hurried, and the tongue coated; countenance anxious and excited; skin dry, cold and hot alternately. She passes urine very freely. Was menstruating at the time, and this stopped the discharge. Breathing impeded from pain in the bowels.

May 30th. Pains all over the body; numbness and sickness.

31st. Very sleepy; in less pain. Arrow-root and milk diet.

June 1st. Feels much relieved; but abdomen excessively

painful on the slightest pressure.—Hir. xx. scrobic. cordis. Liq. opii sedat. m xxv.

2d. Abdomen still painful; bowels open.—Rep. Hir. xx. et liq. opii sed. in mucil. ʒij. 4tis horis.

3d. Much better; complains only of slight pain; bowels open; pulse feeble. Discharged.\*

*Remarks.*—The only circumstances requiring remark in this case are the largeness of the dose, and the rapidity of recovery. The quantity of sugar of lead taken was not less than an ounce and a-half, and the patient recovered in three days.

## CASE OF POISONING BY THE ESSENTIAL OIL OF BITTER ALMONDS.

BY J. H. SAVAGE, ESQ., OF WEST BROMWICH.

WITH THE CHEMICAL ANALYSIS AND REMARKS,

BY ALFRED S. TAYLOR.

*Symptoms*—*Power of locomotion after a large dose*—*Rational answer to a question*—*Death in about seven minutes*—*Post-mortem appearances*—*Remarks*—*Chemical analysis*—*Examination of the stomach and its contents; and of a portion of the poison*—*Separation of the oil by ether*—*On redness of the mucous membrane of the stomach in poisoning by prussic acid.*

(*Extract of a Letter from Mr. Savage.*)

“ON Wednesday evening, October 1, 1845, about ten minutes before ten o'clock I was sent for to visit a man who was taken suddenly ill at a beer-shop about one hundred yards from my own house. I accompanied the party down, and directly on entering the house perceived a very powerful smell of bitter-almond oil; this became sensibly stronger as I got to the room where the man was, and I found it was caused by a quantity of matter which the man had vomited from his stomach during the act of falling.

“I found the man reclining on the corner of the sofa, with his left arm hanging over the end; he gave one feeble con-

\* Reported by Mr. S. W. Devenish.

vulsive action of the chest after I got there, and was dead. I dashed cold water over his chest and face freely, but without producing the slightest effect upon him. I tried no other remedies, as, from not being acquainted with the nature of the case previously to visiting him, I was unprovided with any means of treatment. The face was very pale; the eye unusually glassy; the pupil dilated; and partial opisthotonos, which I have no doubt would have been more complete if he had not been supported by the corner of the sofa.

“The man was an entire stranger to this neighbourhood, unowned to the present time, and no documents were found upon him to afford any information as to who he might be or where he came from. He called at the house about half-past eight o'clock in the evening, and inquired if he could have a bed there. On being told he could, he left the house for ten minutes or a quarter of an hour. On returning he asked for a pint of ale and a paper of tobacco, and afterwards ordered some toasted cheese for his supper, and called for a second pint of ale with it: part of this last pint was drunk with his supper, the rest reserved. Two men, strangers to him, were in the same room during this time, with whom he occasionally entered into conversation: these men left at twenty-five minutes to ten o'clock. After they were gone, he was heard by the landlady (who sat in an adjoining kitchen with only an open door intervening, and only distant about six yards from where the man sat) to stir something up with what she imagined, from the sound, to be the stem of a pipe, in the pint cup out of which he was drinking his ale. A few minutes afterwards he called for half a pint of water to drink: it was brought to him, and an intimation was given to him that it was nearly time he was going to bed. In about five minutes he got up from his seat, was walking to the staircase door leading to the bed-rooms, which was about three yards from where he sat, and equidistant between the landlady in the kitchen and himself, when the landlady called to him, telling him he had to pay for his supper and his bed. This caused him to turn and go to her, and he placed on a table by the side of which she was sitting, rather with her back towards him, a spectacle-case containing a pair of glasses. On seeing this, she replied they were of no



use to her, as she wanted the money and not these. He feebly replied he would pay her in the morning: she raised her head; the man was falling upon the floor, and vomiting as he fell. She immediately sent for me, and whilst I was coming she observed no regular breathing, but only a few convulsive motions of the chest, which gradually became slower and more feeble, and finally ended with the one I was in time to see. She said that there had been no struggling, no scream, but that he fell into a state of total insensibility at once. On the table near where he sat, I found in the pint cup from which he drank his ale about ten drachms left at the bottom, and of which I took charge, and send to you. You will, I think, find in it nearly two drachms of the oil of bitter almonds. About two-thirds of the water he had called for was drunk; the remainder left was quite free from any odour. On searching his pockets afterwards I found a one-ounce phial in his coat pocket, containing about three drops of the oil, without any label or any thing to denote from whence he had procured it. I imagine he must have got it when absent for the ten minutes or quarter of an hour; but none of the druggists here will admit having sold such an article.

“SECTION CADAVERIS EIGHTEEN HOURS AFTER DEATH.—The man appeared about 50 or 55 years of age, five feet nine and a half inches high, nervous temperament, muscular, with a fair proportion of adipose substance under the skin; the muscles were extremely rigid, so much so as to be overcome only with considerable difficulty; the eyes still retained considerable brilliancy; the face was very pale; the hands and feet unusually livid. On opening the cavity of the chest, the odour of the oil of bitter almonds was very evident; the lungs healthy, no adhesions; the venous system gorged with fluid black blood; the heart healthy; nothing uncommon in the pericardium; the liver enlarged, but shewed no other mark of disease when cut into; the gall-bladder the natural colour, about half filled with gall; the stomach was much inflamed, especially about the cardiac extremity and œsophageal opening; it contained about eight ounces of undigested fluid, mixed with lumps of cheese, and gave off a very power-

ful odour of the oil of bitter almonds, and globules of it could be distinctly seen floating about and glazing the surface of the liquid; the mucous coat was softened in places; the intestines were healthy; the bladder empty and collapsed; the brain was free from any disease or any engorgement; it had a slight odour of bitter almonds."

*Remarks by Mr. Savage.*—"The dose taken by the man must have been very large, probably the one-ounce phial was nearly full, as, from the quantity of ale I send to you, you will find that it contains *nearly one-fifth* of the quantity in oil. The short time elapsing between the period at which he was supposed to have taken the poison (*i.e.* just after he called for the water) and his death, only about six or seven minutes, leads to the same conclusion. The absence of the scream said generally to be observed in those who kill themselves with hydrocyanic acid (and the poisonous properties of the oil of bitter almonds depend upon this) goes to prove that this symptom is not always observed. The great inflammation, accompanied with softening of the stomach, is somewhat unusual, and scarcely to be accounted for by the acidity of the oil; and it will perhaps become a question whether this has arisen from the oil; or, taking the enlargement of the liver in conjunction with the inflammation of the stomach, may it not almost fairly be supposed that the man had been in the habit of drinking to a certain extent? Altogether it is a case of considerable interest, and I thought you might imagine it not undeserving your attention."

*Chemical Analysis.*—I received from Mr. Savage the stomach, its contents in a separate vessel, and a phial containing eight drachms of a brownish-coloured liquid. I proceeded to make a chemical examination of these different articles on the 11th of October, *i.e.* ten days after death.

1. *The Stomach.*—On removing the viscus from the vessel in which it was contained, a very powerful odour of bitter almonds was perceived. The stomach, which had been cut open, was universally reddened on its mucous surface, and highly rugose. Towards the cardiac extremity the membrane was of a deep red brown colour. The colour was not removable by washing; and there was no appearance of distinctly injected vessels, such as is often seen as a result of

the action of irritant poisons. About one drachm of a bloody liquid, smelling strongly of bitter almonds, drained from the organ. The stomach was placed in a clean glass vessel, and a dial glass, moistened with a solution of nitrate of silver inverted over it, according to the plan recommended in a Paper published in the Medical Gazette\*; but after a quarter of an hour there was no perceptible deposit of cyanide of silver. The stomach was then cut up, the pieces mixed with six ounces of distilled water, and distillation carried on at a very gentle heat in a water-bath, until two ounces were obtained in the receiver. The liquid obtained by distillation was neutral: it possessed a faint odour of bitter almonds, mixed with an offensive smell of animal matter; but no odour of prussic acid could be perceived in it, nor did the surface give any deposit of cyanide of silver, when a solution of the nitrate was placed over it for a considerable time.

On adding to the liquid a solution of nitrate of silver only a faint cloudiness appeared after a time. When the ammonio-nitrate of silver was added, the liquid became slowly turbid, and the white precipitate, which was more abundant than that procured by the simple nitrate, was dissolved by a large excess of strong nitric acid. On applying the iron test, in the usual way, the liquid acquired a faint green colour, and, after forty-eight hours, a minute trace of Prussian blue was deposited. The action of the iron test was, in this instance, more satisfactory than that of the silver test, since it was here impossible to collect a sufficient quantity of the silver precipitate to try the effect of combustion. The deposit of Prussian blue proved the presence of a minute quantity of prussic acid adhering to the stomach, while the odour sufficiently indicated that the poison had been taken in the form of essential oil of bitter almonds.

2. *Contents of the Stomach.*—These were poured into a graduated vessel, and found to measure six ounces and a half. The liquid had an exceedingly powerful odour of bitter almonds, mixed with an offensive smell of animal matter. Besides blood and mucus, there were some half-digested lumps of cheese floating in it. The re-action was rather strongly acid.

\* Vol. xxxv. p. 328.



Particular attention was given to the *odour* : that of bitter almonds was distinct, while that of prussic acid could not be detected. The iron test was applied to a small portion of the liquid before distillation, but without any satisfactory result, in consequence of the presence of a large quantity of organic colouring matter. On washing the sediment, after the application of the test, no Prussian blue could be obtained. The whole of the liquid contents were then transferred to a retort, and distilled in a sand-bath at a very gentle heat, until two ounces of a watery liquid, rendered slightly turbid by the presence of a small quantity of oily matter, were obtained. This liquid possessed a well-marked acid re-action : it had the odour of bitter almonds, and, besides this, the peculiar odour of prussic acid could now be detected, both by my colleague, Mr. Aikin, and myself. On adding to one portion of the distilled liquid nitrate of silver, a faint white precipitate was thrown down, slowly soluble in a large quantity of cold, and rapidly in boiling nitric acid. The ammonio-nitrate of silver yielded a more abundant precipitate than the nitrate. The precipitate was entirely soluble in strong nitric acid. The distilled water of bitter almonds gave precisely similar results. The proto-nitrate of mercury gave the usual blackish-grey precipitate, consisting of metallic mercury and bichloride, which it forms with hydrocyanic acid, while with muriatic acid, as it is well known, it produces only a white precipitate (chloride of mercury). On adding solution of acetate of lead there was no effect ; the liquid was not blackened ;—a result which shewed the absence of any sulphuret. Three drachms were then treated with the iron test, and, on re-dissolving the surplus oxide of iron by muriatic acid, the liquid was clear, but it had a light greenish tint. In twenty-four hours it had entirely lost its green colour, and there was a well-marked deposit of Prussian blue. On placing a watch glass, moistened with nitrate of silver, over the mouth of the bottle containing the distilled liquid, there was a deposit of a white crust (cyanide of silver) in about ten minutes. This precipitate was boiled in a few drops of caustic potash, the clear liquid poured off from the brown oxide of silver thrown down, and then submitted to the iron test in a small tube. A minute quantity of Prussian blue was obtained. A large dial glass,

moistened with nitrate of silver, placed over the glass measure from which the contents of the stomach had been poured before distillation, presented, in about a quarter of an hour, a faint white deposit of cyanide of silver towards the margin of the solution of nitrate. These different experiments rendered it certain that prussic acid was present in the contents of the stomach, but not in large proportion. The presence of only a small quantity of oil therein may probably be explained by the greater part having been ejected by vomiting.

3. *Contents of the Phial.*—The phial contained eight drachms of an opaque liquid of a light brown colour, having very much the appearance of cold tea. It had an acid reaction, and a powerful odour of bitter almonds, which was still perceived when a small portion was considerably diluted. The vapour, when exposed to the nitrate of silver, speedily furnished a deposit of cyanide of silver, but the odour of prussic acid, owing to the quantity of essential oil of almonds present, could not be perceived. The phial, with its contents, was set aside for forty-eight hours, when a considerable quantity of oil had collected at the bottom of the vessel, amounting to one-fourth of the whole bulk of the liquid—*i. e.* two fluid drachms—thereby confirming the opinion expressed by Mr. Savage. It was of a red-brown colour, and the odour, as well as the density, proved that it was essential oil of bitter almonds. The contents were then shaken up and divided into two equal portions. Four drachms, mixed with an equal bulk of water, were distilled at a very gentle heat until one half was obtained in the receiver. The product was milky, but colourless. On standing, it separated into a small oily portion, upon which a large quantity of clear watery liquid floated. The odour of bitter almonds was very strong; that of prussic acid was concealed. Nitrate of silver gave, with one portion, a decided precipitate of cyanide of silver, and the iron test gave, with another, a good deposit of Prussian blue.

The distillation was not carried further, because I believe that, as Liebig states, all the hydrocyanic acid which is mixed with the essential oil passes over with the first portions, and that what remains is the pure oil retaining its odour, although, perhaps not to so marked a degree, entirely free from any poisonous properties.

The density of the essential oil of bitter almonds being 1.043, it will commonly be found, as in this instance, at the bottom of the liquid in which it may have been diffused; and this fact may be occasionally of some importance, in relation to the quantity taken when this poison is swallowed in a state of admixture with watery liquids. Knowing its great solubility in ether, the following plan was adopted to separate it, without distillation, from the remaining four drachms of the contents of the phial. An equal quantity of pure ether was added to the liquid, and the bottle was well shaken and set aside. In the course of a few hours the oil, dissolved in the ether, was brought to the surface as a clear yellow-coloured liquid, and the ethereal solution was then procured by decantation. It appeared to be mixed with a small quantity of some oil not very soluble in ether, probably one of those oleaginous substances contained in the oil of bitter almonds, with which, as Liebig remarks, we are not yet fully acquainted. On adding solution of potash and sulphate of iron to a few drops of the ethereal liquid, and then diluted muriatic acid, a considerable quantity of Prussian blue was procured. It is remarkable that the nitrate of silver gives no precipitate with the essential oil of bitter almonds when dissolved in ether, notwithstanding the presence of prussic acid. The ether and a specimen of common essential oil were separately treated with nitrate of silver, but there was no perceptible change; and on dissolving a portion of the oil in ether, and adding nitrate of silver, it formed an opaque solution when agitated, but became clear after a short time, and no cyanide of silver was deposited. It is strange that the affinity of cyanogen for silver should be thus suspended, when, according to Liebig, the levigated peroxide of mercury, after several days' digestion, easily separates the cyanogen from the prussic acid contained in the oil. Dr. Gregory points out a similar want of action of nitrate of silver on the distilled water of bitter almonds. He says that nitrate of silver does not detect the hydrocyanic acid in this water, although it contains one grain of acid per ounce, unless ammonia is added with the nitrate, and after a time neutralized by nitric acid.\* In testing this water, I have,

\* *Outlines of Chemistry*, Pt. II. 341.



however, found that nitrate of silver gives a precipitate with it, although not so copious as that which is formed on the addition of the ammonio-nitrate: this last test also precipitates the ethereal solution of the oil.

The production of cyanide of silver, under these circumstances, I believe to be entirely unnecessary as evidence, provided a well-marked precipitate of Prussian blue be obtained, and one or two drops of an ethereal solution of the oil is quite adequate for this purpose. If a chemist wishes to go further, he may transform the Prussian blue to cyanide of silver by acting on it with caustic potash, and subsequently adding oxide or nitrate of silver to the cyanide of potassium thus formed. A still more ready plan for obtaining a metallic cyanide is to boil the precipitate with half its weight of finely-powdered peroxide of mercury in eight parts of distilled water, and filter while hot. Crystals of bicyanide of mercury are deposited on cooling: these, when heated in a tube, yield cyanogen.

The results clearly proved that essential oil of bitter almonds, in the proportion of two drachms, was present in the contents of the phial, and that the oil was strongly impregnated with prussic acid. The exact proportion of prussic acid present was not determined;—indeed, a good and simple process for this purpose is yet a desideratum; but parallel experiments with the common essential oil gave results which shewed that there was no important variation in the strength of the acid which this specimen of common commercial oil contained.

There is some interest attached to this case from the accuracy with which the facts have been recorded by Mr. Savage. The exact quantity of oil which the man swallowed could not be determined, for it was impossible to say how much was contained in the phial found in his pocket; but it was probably a large dose, judging by the quantity left at the bottom of the cup out of which he drank the ale, and the rapidity of death. The time at which he swallowed it was most probably immediately after he was heard by the landlady to stir the liquid. About *five minutes* elapsed, when he was seen deliberately walking towards the staircase, conscious

and self-possessed, for he replied rationally to questions put to him. The symptoms then appear to have come on suddenly, and to have commenced with vomiting; during which, probably, part of the oil which he had swallowed was ejected. He then became insensible, and the breathing, as usual, convulsive at intervals; but, excepting slight opisthotonos, there were no convulsions, and there was no scream or shriek preceding death. The absence of convulsions of the limbs and trunk, if we except the partial opisthotonos, is an important fact, because this was precisely a case in which, from the individual having had time to perform many acts indicative of volition and locomotion, their occurrence might, according to some authorities, have been expected. This doctrine, however, is, I believe, now almost entirely abandoned; for many facts have been recently accumulated which shew that the old opinion of convulsions being an invariable attendant on poisoning by prussic acid, when the person survived sufficiently long to perform such acts, is unfounded. With respect to the scream or shriek, alleged to precede death, I have hitherto met with no facts to support the belief that it can be regarded as a symptom of this kind of poisoning in the human subject; and its occasional occurrence in animals may have depended on accidental circumstances. From the facts observed by Mr. Savage, it appears probable that the whole duration of the case did not exceed *seven minutes*; and the fatal symptoms were not manifested until within the last *two minutes*. The treatment adopted, cold affusion, was that which has been known to prove most effectual, but from the rapid operation of the poison, it was here unavailing. It is doubtful, considering the state of the countenance, whether blood-letting would have been attended with any good effects.

The post-mortem appearances, if we except the condition of the stomach, present but little to call for special remark. In some cases the face has been found bloated and swollen, here it was observed to be very *pale*. Cadaverous rigidity (eighteen hours after death) was strongly developed; and the hands and feet were unusually livid. The eyes were remarkably brilliant. The blood, with which the venous system was gorged, was liquid and of a dark colour. As much stress

was laid at Tawell's trial on the condition of the lungs in poisoning by prussic acid, it is proper to remark, that these organs, as well as the heart, were in this case quite healthy. In another case, lately communicated to me by Dr. Bull of Hereford, the lungs were also perfectly healthy. There was an odour of the oil of bitter almonds on opening the chest, rendering it probable that either a portion of the essential oil, or its odoriferous principle, had been absorbed with the prussic acid and circulated throughout the body. The brain, which was perfectly healthy, and free from congestion, also gave out a slight odour of bitter almonds.

The state of the mucous membrane of the stomach may be regarded as somewhat unusual. When I saw it, although the stomach had probably undergone some change, the cardiac extremity of the organ appeared as if it had been acted upon by a powerful irritant. As Mr. Savage remarks, this redness may have been a coincidence, and not connected with the action of the poison. At the same time, there are many cases on record in which, although death has taken place more slowly, the stomach has been found more or less inflamed in poisoning by prussic acid. This condition of the stomach was remarked in the cases of the Parisian epileptics.\* In the Museum of Guy's Hospital is a drawing of the stomach of a person poisoned by prussic acid in which the mucous membrane is highly reddened. In another case referred to me by Mr. Newham, of which the details were published in the Guy's Hospital Reports for April 1845, the mucous membrane at the greater curvature was of a deep red hue from inflammation. And lastly, in the stomach of a dog (shewn to me by Mr. Hicks) which was killed by three drachms of prussic acid, the mucous membrane was as strongly reddened as it is often found to be under the action of arsenic. It is impossible to regard all these cases of an inflamed state of the mucous membrane as mere coincidences; and further investigations are required to determine how far, and in what cases, prussic acid is capable of acting as an irritant.

The essential oil of bitter almonds, even when freed from prussic acid, has a hot and burning taste; and, like some

\* *Annales D'Hygiène*, I. p. 507. 1829.



other essential oils, it may possibly exert an irritant action when taken in a large dose.

With respect to the chemical analysis, it will be observed that the odour of bitter almonds is entirely independent of that of prussic acid, for it may exist where none of the acid is present. It will be also remarked that the odour of bitter almonds was very powerful in the stomach so late as *ten days* after death. Further, with regard to the contents of the stomach, the odour of prussic acid was not perceptible *before distillation*, but was easily perceived afterwards, the odour having been concealed by that of bitter almonds. That the acid was not a product of distillation was proved by the action of the vapour of the liquid on a solution of nitrate of silver *before distillation*. Lastly, the employment of ether may be occasionally serviceable for the separation of the essential oil from organic liquids.

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#### CASE OF POISONING BY PRUSSIC ACID,

IN WHICH THE POWERS OF VOLITION AND LOCOMOTION WERE  
EXERTED AFTER A LARGE DOSE.

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FOR the following history of an interesting case I am indebted to Mr. W. T. Lowe, Surgeon, of Aldersgate Street, formerly a pupil at this hospital. I give it in his own words :—

“On the 25th of December 1845, about 11 A.M., I was hastily summoned to visit a person, said to be taken suddenly ill at a coffee-house a short distance from my abode. Upon my arrival I found a young man supported in a chair, with an extremely pallid countenance; placid aspect; lips slightly livid; the mouth clean; but without signs of life. It was stated that he had arrived the night previously, a stranger; retired soon to bed, complaining of being cold and tired; and was leaving the house in the morning, without having partaken of any refreshment during his stay, when he fell down at the outer door. This account, combined with personal appearances, impressed me with the momentary idea of his being in a state of syncope from exhaustion. The body was placed in a recumbent position; cold water applied to the face. No stimulants being at command in the house, I quickly obtained some liq.

ammon., which was freely applied about the nostrils, and a diluted portion put in the mouth. The dilated state of the pupils, with so speedy a cessation of life, now led to closer investigation; and I learnt that he had asked for a drinking-glass before coming down stairs. A tumbler was brought me, wet inside, as he left it, colourless, and without smell. There was nothing suspicious about the bed-chamber. Upon further examination, I discovered in the pocket of an under coat (as he had on a top coat also) a phial empty, and corked, labelled, "Acid. hydrocyani P.L. Poison." No odour was to be detected, upon smelling closely to the mouth of the deceased, save that of the ammonia; neither was there on repeating the trial a few hours afterwards. Although I was labouring under a cold myself at the time, the odour, I conceive, would not have escaped me if present, being painfully sensitive to the vapour of prussic acid. The pouring of cold water from a height over the chest and down the spine was kept in free operation for some time. There was no escape of urine or fæces. The address of the chemist who supplied the acid being on the label, I was enabled to obtain both information as to the quantity sold to the deceased the day previously—viz. *two drachms*—and a further portion of the same quality supplied, said to contain two per cent.

"The peculiar interest of this case results from the duration of the power of volition after so large a dose had been taken, the deceased having descended *thirty stairs*, and walked about *twenty paces*, before he became powerless: this happened whilst he was in the act of attempting to open the street door.

"The proprietor of the house and the servant were in a back room on the ground floor, level with the coffee-room he passed through upon coming down stairs, and they saw him proceed directly to the door: the servant advanced to open it for him, and had no sooner gained his side than he fell, and, to use her own words, 'threw his arms about, and made a noise in breathing, fetching it hard, but there was nothing approaching to a scream:' he very soon became still. In the first instance, another medical man had been sent for, who was absent; thus an interval of a quarter of an hour, at least, must have occurred before I reached the house.

"On the inquest, evidence was given of the deceased being

about twenty-three years of age, accustomed to literary pursuits : for some time past he had been in a desponding state, owing to disappointment and pecuniary distress. He was in the habit of taking laudanum ; and four days previously had attempted self-destruction by swallowing ten drachms of laudanum, which was rejected from the stomach :—he did not require the aid of remedial agents.

“The Coroner did not consider an inspection to be necessary. Query, Would the habitual use of narcotics render the nervous system less susceptible of the usually rapid fatal influence of the poison which destroyed life? The causes supposed to favour the operation of this poison—long fasting and weariness or exhaustion—were fully present here. The attempt, on the part of the deceased, who was alone in the room, to leave the house after taking the poison, is singular.”

*Chemical Analysis.*—Mr. Lowe delivered to me a small bottle containing a portion of prussic acid, of the same strength as that supplied to the deceased by the druggist. It was measured out of the same bottle.

The quantity which I thus received for examination measured, in a drop measure, fifty drops, and weighed, in the measure accurately balanced to the tenth of a grain, fifty-four grains.

The acid adhering to the bottle after pouring off the fifty drops, was tested by the iodo-cyanide of potassium and mercury ; and although the liquid had a well-marked acid re-action, a negative result was obtained. It was thus proved that the acid was pure, *i.e.* that no foreign acid was present. The peculiar odour of the acid was exceedingly well marked.

The whole quantity was entirely precipitated by nitrate of silver ; the precipitate thoroughly washed, dried in a steam bath, and weighed. The weight of the precipitate was 5·4 grains. Hence,  $134 : 27 :: 5\cdot4 : 1\cdot08$  grains of anhydrous acid.

Cy. Ag. H. Cy. Cy. Arg. H. Cy.

The per-centage strength of the acid was, therefore,  $54 : 1\cdot08 :: 100 : 2$ , just two per cent, like the acid of the Pharmacopœia.

It is highly probable that the deceased took the whole of the two drachms, as the bottle was completely drained. It became, therefore, a matter of interest to determine what quantity of



anhydrous acid the deceased had taken. Mr. Lowe ascertained for me that two drachms, measured in the measure of the druggist who sold the poison, weighed 127 grains; and as 54 grains of this acid contained 1·08 of anhydrous acid,

$$54 : 1\cdot08 :: 127 : 2\cdot54.$$

Thus, then, an individual was here enabled to walk, and otherwise exert his bodily powers, after having swallowed more than *two grains and a-half* of anhydrous prussic acid! Many facts of this kind have been recorded of late years; but I am not aware of any instance in which such a series of voluntary acts has been performed, and such a power exerted, after so large a dose of the poison had been taken. This case, therefore, creates an additional caution; namely, that we must make full allowance for the occurrence of some delay in the accession of symptoms, even where the dose is large. It is not improbable, as Mr. Lowe suggests, that the habitual use of narcotics may have tended to retard the symptoms.

There are some other points of interest. There was *no odour* of prussic acid about the *mouth* of the deceased, although a considerable dose had only shortly before been taken. The description of the symptoms by an eye-witness closely corresponds to the account given by Tawell of the symptoms which he witnessed in the case of Sarah Hart. Then, again, there was no "scream," although the deceased, from long fasting and exhaustion, was in a condition which has been considered favourable for the occurrence of this alleged symptom.

LIST  
OF  
GENTLEMEN EDUCATED AT GUY'S HOSPITAL,  
WHO HAVE BEEN ADMITTED  
MEMBERS OF THE ROYAL COLLEGE OF SURGEONS,  
AND OF THE APOTHECARIES' COMPANY;  
AND WHO HAVE OBTAINED  
DEGREES IN MEDICINE IN THE UNIVERSITY OF LONDON.  
FROM SEPTEMBER 1845, TO SEPTEMBER 1846.

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*Royal College of Surgeons.*

OCTOBER 1845.

Mr. Thomas O. Walker.		Mr. William H. Greenwood.
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NOVEMBER.

Mr. Henry B. Beck.		Mr. Frederick Howard.
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DECEMBER.

Mr. John Braxton Hicks.		Mr. William B. Parker.
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MARCH 1846.

Mr. Daniel Hooper.		Mr. George H. Jenkins.
— Jabez Spence Ramskill.		

MAY.

Mr. William P. Ward.		Mr. David Evans.
— John Ward.		— Frederick B. Fulcher.
— Amos Jowett.		— Henry Loney.
— Charles Hailey.		

JULY.

Mr. Richard Iago Squires.		Mr. Henry Peskett.
— William L. Norris.		— Joseph Olguin.
— Charles Nattrass.		— Metcalfe Johnson.
— George Peskett.		— James Spurr.

AUGUST.

Mr. Percival T. Meggs.		Mr. Robert K. Buckell.
— William F. Cleveland.		— George F. H. Brown.
— Robert Finch.		

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**Apothecaries' Hall.**

OCTOBER 1845.

Mr. Andrew Davies.		Mr. Charles P. Mingaye.
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NOVEMBER.

Mr. John Eddison.		Mr. Marshall Hall Higgin-
— Alfred Roberts.		bottom.

DECEMBER.

Mr. Daniel Hooper.

JANUARY 1846.

Mr. Alfred Lacy.		Mr. George Ayton.
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FEBRUARY.

Mr. Charles John Farr.

MARCH.

Mr. Henry Jacobs.

APRIL.

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— Osmond Mullett.		— William Bowden.
— George Peskett.		— Charles Nattrass.
— Henry Peskett.		— Francis R. Hoghton.

MAY.

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— William B. Beatson.		— Frederick Howard.
— Metcalfe Johnson.		— Robert Lumb.
— Frederick Collins.		— John L. Johnstone.

JUNE.

Mr. Michael Walling.		Mr. Henry Isaac Fotherby.
— Lewis Bossy.		— Charles Tipple.

JULY.

Mr. Joseph C. Martin.		Mr. John Bassett.
— Thomas O. Walker.		— George Henry Jenkins.
— John C. L. Marsh.		

AUGUST.

Mr. William Henry Greenwood.





**University of London.**

DOCTOR OF MEDICINE, NOVEMBER 1845.

Dr. Thomas Williams.

To Dr. Williams was awarded the Gold Medal for a Commentary on a Case in Medicine.

SECOND EXAMINATION FOR BACHELOR OF MEDICINE.

*1st Division.*

Mr. Charles Matthew Wayte.

IN THE EXAMINATION FOR HONOURS,

Mr. Wayte obtained the Gold Medal for Medicine.

FIRST EXAMINATION FOR BACHELOR OF MEDICINE, AUGUST 1846.

*1st Division.*

Mr. Samuel Osborne Habershon. |      Mr. Samuel Wilks.

IN THE EXAMINATION FOR HONOURS,

Mr. Habershon obtained the following: for Anatomy and Physiology, Exhibition and Gold Medal; for Chemistry, Gold Medal; for Materia Medica and Pharmaceutic Chemistry, Exhibition and Gold Medal.

Mr. Wilks obtained Certificates of Honour for Chemistry and Materia Medica.

## MEDICAL SCHOOL OF GUY'S HOSPITAL.

At the close of the Session 1845-46, the Prizes and Certificates of Distinction were awarded as follows:—

### CLINICAL CLERKS.

SESSION 1845—1846.

- Mr. W. F. Cleveland. . . . . Obtained the Medical Clinical Prize in addition to Certificate of Distinction in Medicine; also obtained the First Midwifery Prize, and Honorary Certificates for both his Medical and Surgical Reports.
- Mr. W. B. Beatson. . . . . Obtained the Second Midwifery Prize; was an Active Reporter of the Clinical Society.
- Mr. R. Buckell. . . . .
- Mr. W. H. Greenwood. . . . . Obtained an Honorary Certificate of Distinction in Natural Philosophy, and the Second Prize from the Pupils' Physical Society; was placed in the First Division in the first Examination for Bachelor of Medicine at the London University, and obtained the Gold Medal for Materia Medica, as well as honours in Chemistry and Anatomy; was an Active Reporter of the Clinical Society.
- Mr. J. Bassett. . . . . Active Reporter of the Clinical Society; also obtained Certificate of Distinction in Midwifery.
- Mr. G. H. King. . . . . Obtained Silver Medal for Materia Medica, the Second Prize in Midwifery, and Certificate of Distinction in Chemistry; also obtained the Pupils' Physical Prize, and was placed in the First Division in his Examination at the London University of London for M. B.
- Mr. G. Browne. . . . . An Active Surgical Reporter.
- Mr. J. Kent. . . . .
- Edward Bentley, M.D. . . . .
- Mr. J. S. Ramskill. . . . . Obtained Certificates of Distinction in Materia Medica and Chemistry.

DRESSERS.

SESSION 1845—1846.

- Mr. J. C. Forster . . . . . Obtained Certificate of Distinction in Chemistry, and Surgical Honorary Certificate of the Clinical Society.
- Mr. W. C. Hood . . . . . Obtained the Surgical Clinical Prize and Honorary Certificate.
- Mr. G. H. Edwards . . . . .
- Mr. J. S. Ramskill . . . . . Obtained Certificate of Distinction in Materia Medica and Chemistry.
- Mr. J. B. Hicks . . . . . Obtained Gold Medals for Materia Medica and Anatomy; Silver Medal for Natural Philosophy, and Prizes for Botany and Practical Chemistry, in addition to honours in various subjects at the University of London. Active Member of the Clinical Society.
- Mr. R. Finch . . . . . Active Member of the Clinical Society; obtained Gold Medal for Materia Medica; Honorary Certificates for Practical Chemistry and Surgical Clinical Reports.
- Mr. Howard . . . . .
- Mr. M. Johnson . . . . . Active Surgical Reporter of the Clinical Society; obtained the Prize for Practical Chemistry, and Second Prize for Chemistry.
- Mr. H. Shelly . . . . . Active Member of the Clinical Society.
- Mr. G. Peskett . . . . .
- Mr. F. Collins . . . . .
- Mr. H. I. Fotherby . . . . . Active Reporter of the Clinical Society; and has obtained Prizes and Certificates of Distinction in Materia Medica, Chemistry, Anatomy, Pathological Anatomy, Medical Jurisprudence, and Natural Philosophy; and obtained honours for Anatomy and Materia Medica in the First Examination for Bachelor of Medicine at the University of London.
- Mr. W. B. Beatson . . . . . Active Surgical Reporter of Clinical Society; also obtained the Second Midwifery Prize.
- Mr. W. L. Norris . . . . .
- Mr. H. Peskett . . . . .



- Mr. Lund . . . . . Active Surgical Reporter ; and obtained the  
Second Prize for Chemistry.
- Mr. W. F. Cleveland . . . (Vide account of Clinical Clerks.)
- Mr. G. Br  wne . . . . . (Vide Clinical Clerks.)
- Mr. Jenkins . . . . .
- Mr. P. P. Nind . . . . .
- Mr. R. Buckell . . . . . (Vide Clinical Clerks.)
- Mr. M. Walling . . . . . Obtained Silver Medal for the Junior Divi-  
sion of Anatomy. Active Reporter of the  
Clinical Society.
- Mr. G. H. King . . . . . (Vide Clinical Clerks.)
- Mr. H. Brenchley . . . . . (Active Surgical Reporter.)
- Mr. G. T. Browne . . . . .
- Mr. J. W. Poland . . . . . Obtained the Surgical Clinical Prize, and  
Honorary Certificate of Distinction.

---

HONORARY DISTINCTIONS AWARDED BY THE CLINICAL SOCIETY.

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- Mr. Key's Testimonial . . . Mr. J. W. Poland.

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HONORARY DIPLOMA OF THE PHYSICAL SOCIETY.

- Sir Philip Crampton, Bart., Dublin.
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